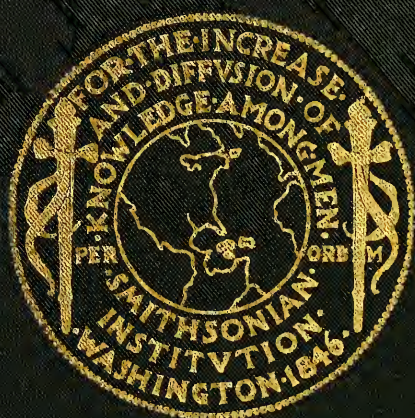
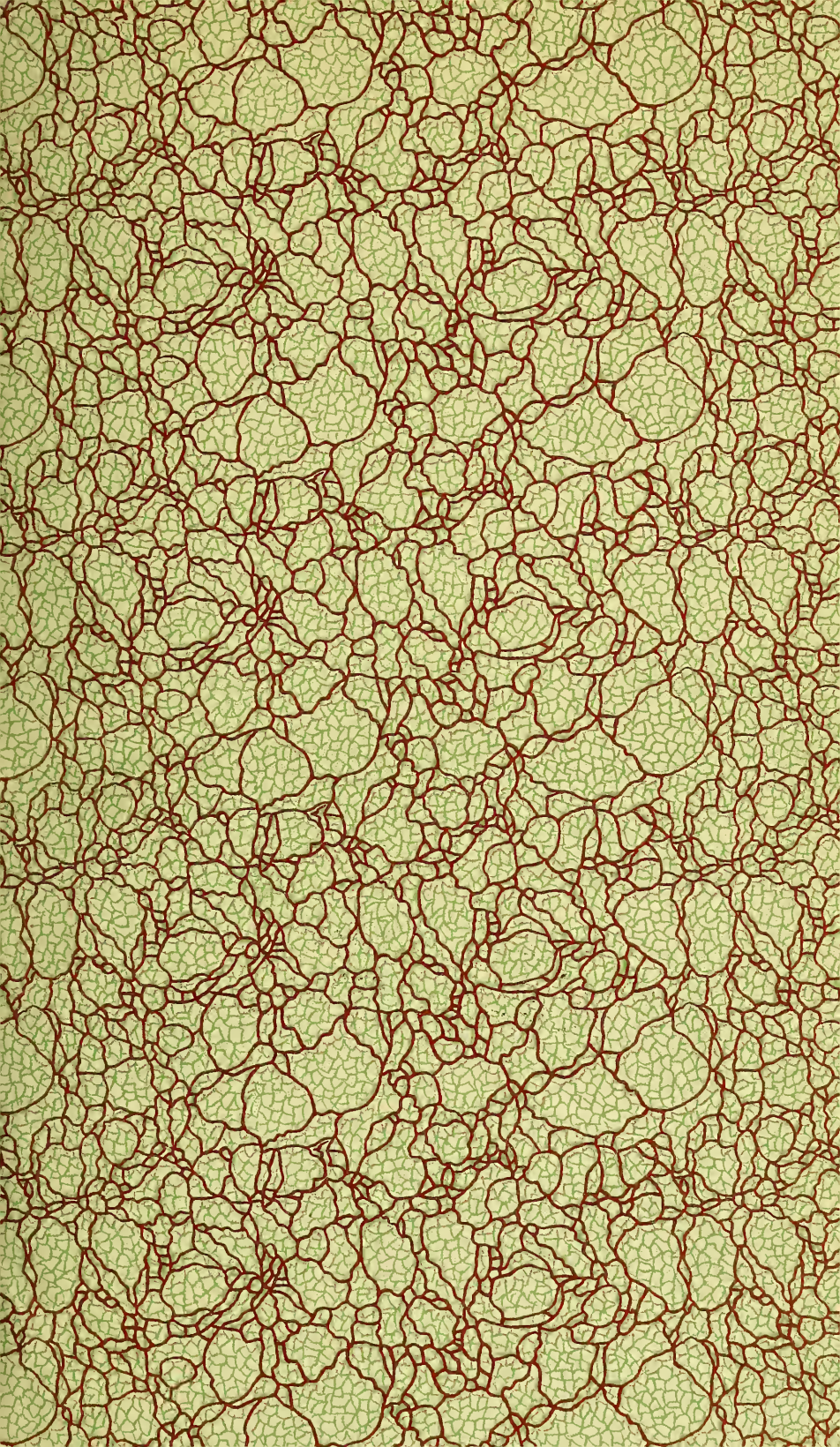






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# BULLETIN

OF THE

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No. 50.

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PART V.



WASHINGTON:

GOVERNMENT PRINTING OFFICE.

1911.



**BULLETIN OF THE UNITED STATES NATIONAL MUSEUM.**  
ISSUED NOVEMBER 29, 1911.

# THE BIRDS

OF

## NORTH AND MIDDLE AMERICA:

A DESCRIPTIVE CATALOGUE

OF THE

HIGHER GROUPS, GENERA, SPECIES, AND SUBSPECIES OF BIRDS  
KNOWN TO OCCUR IN NORTH AMERICA, FROM THE  
ARCTIC LANDS TO THE ISTHMUS OF PANAMA,  
THE WEST INDIES AND OTHER ISLANDS  
OF THE CARIBBEAN SEA, AND THE  
GALAPAGOS ARCHIPELAGO.

BY

ROBERT RIDGWAY,  
CURATOR, DIVISION OF BIRDS.

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### PART V.

|                                     |                                        |
|-------------------------------------|----------------------------------------|
| Family PTEROPTOCHIDÆ—The Tapaculos. | Family DENDROCOLAPTIDÆ—The Woodhewers. |
| Family FORMICARIIDÆ—The Antbirds.   | Family TROCHILIDÆ—The Humming Birds.   |
| Family FURNARIIDÆ—The Ovenbirds.    | Family MICROPODIDÆ—The Swifts.         |
| Family TROGONIDÆ—The Trogons.       |                                        |

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WASHINGTON:  
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1911.



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## PREFACE.

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Circumstances have retarded the completion of the present volume, chief among which were interruption by field work (including a second visit to Costa Rica), occasional periods of illness, and the specially difficult character of some of the included groups; furthermore, one large family (the Woodpeckers, *Picidæ*) was worked up and even set in type, but was finally omitted because its inclusion would increase the bulk of the volume far beyond a convenient size. It will, therefore, be included in Part VI.

The Families included in this and preceding volumes are as follows:

Part I, issued October 24, 1901, included the Family *Fringillidæ* (Finches) alone.

Part II, issued October 16, 1902, included the Families *Tanagridæ* (Tanagers), *Icteridæ* (Troupials), *Cœrebidæ* (Honey Creepers), and *Mniotiltidæ* (Wood Warblers).

Part III, published December 31, 1904, included the *Motacillidæ* (Wagtails and Pipits), *Hirundinidæ* (Swallows), *Ampelidæ* (Waxwings), *Ptilogonatidæ* (Silky Flycatchers), *Dulidæ* (Palm Chats), *Vireonidæ* (Vireos), *Laniidæ* (Shrikes), *Corvidæ* (Crows and Jays), *Paridæ* (Titmice), *Sittidæ* (Nuthatches), *Certhiidæ* (Creepers), *Troglodytidæ* (Wrens), *Cinclidæ* (Dippers), *Chamæidæ* (Wren-Tits), and *Sylviidæ* (Warblers).

Part IV, issued July 1, 1907, contained the remaining groups of Oscines, namely, the Families *Turdidæ* (Thrushes), *Zeledoniidæ* (Wren-Thrushes), *Mimidæ* (Mockingbirds), *Sturnidæ* (Starlings), *Ploceidæ* (Weaver Birds), and *Alaudidæ* (Larks), together with the Haploophonæ or Oligomyodian Mesomyodi, comprising the Families *Oxyruncidæ* (Sharp-bills), *Tyrannidæ* (Tyrant Flycatchers), *Pipridæ* (Manakins), and *Cotingidæ* (Chatterers).

The present volume contains the Tracheophone Mesomyodi, represented by the Families *Pterotochidæ* (Tapaculos), *Formicariidæ* (Antbirds), *Furnariidæ* (Ovenbirds), and *Dendrocolaptidæ* (Woodhewers), together with the Macrochires, containing the Families *Trochilidæ* (Humming Birds) and *Micropodidæ* (Swifts), and the Heterodactylæ, represented only by the Family *Trogonidæ* (Trogons).

The number of species and subspecies described in the five volumes is 2,038, with 351 additional extralimital forms characterized in the "keys." About 1,150 to 1,200 forms remain to be treated in subsequent parts of the work.

Acknowledgments for the loan of specimens for use in the preparation of the present volume are due to the same individuals and public



institutions as have already been named in previous volumes; also to Mr. C. H. Lankester, of Cachí, Costa Rica, who kindly placed the Tracheophones of his fine collection of Costa Rican birds at the author's service.

To Señor Don José C. Zeledón, of San José, Costa Rica, the author is specially indebted for most generous help, at considerable expense to himself, in making a very fine collection of the birds of that country, which proved of incalculable value in the preparation of this work.

Dr. C. W. Richmond, Assistant Curator, and Mr. J. H. Riley, Aid, of the Division of Birds, U. S. National Museum, have rendered invaluable assistance; Dr. Richmond through his special knowledge of ornithological bibliography and his extremely useful and very complete card catalogue of generic and specific names, made at "first hand," or directly from the publication in which each name was first published, as well as by carefully scanning the proof sheets with particular reference to correctness of citations in the synonymy; Mr. Riley, by copying references from various publications, but especially through having performed the tedious task of measuring several thousands of specimens.<sup>1</sup>

There has been some criticism of the present work on the ground that certain books, local lists, and other publications have not been cited in the synonymies. The omission of these is very much regretted by the author, who in explanation, if not justification, would state that it has been quite impossible for him to cover the whole field; that the literature of ornithology is so vast, and increasing so rapidly, that to bring the bibliography and synonymy of all the species up to date and keep it so would require all the time that any one individual could possibly give to it; and that since much the greater part of this labor (which has justly been termed "the drudgery of ornithology") has been done by the author himself, very largely in his own time (which means during hours which should have been

<sup>1</sup> The number of specimens examined during the preparation of this volume is as follows:

|                                                                              |        |
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| Collection of the U. S. National Museum.....                                 | 4, 846 |
| Collection of the Biological Survey.....                                     | 1, 118 |
| Collection of the American Museum of Natural History.....                    | 2, 255 |
| Collection of the Carnegie Museum.....                                       | 1, 358 |
| Collection of the Field Museum of Natural History.....                       | 478    |
| Collection of the Academy of Natural Sciences, Philadelphia.....             | 170    |
| Collection of the Boston Society of Natural History.....                     | 6      |
| Collection of the Museum of Comparative Zoology.....                         | 2, 097 |
| Collection of the Museo Nacional, Costa Rica.....                            | 66     |
| Collection of the Museum of Vertebrate Zoology, University of California.... | 4      |
| Collection of A. E. and O. Bangs, Boston.....                                | 1, 877 |
| Collection of C. H. Lankester, Cachí, Costa Rica.....                        | 83     |

given to rest or recreation), he hopes that critics may be lenient as to this shortcoming of the work.

A matter which has called forth wholly unexpected criticism is the necessarily irregular manner in which brief descriptions of nests and eggs are interspersed through the pages of this work. That the purpose of these "vague and scattered descriptions" might be misunderstood by anyone was a possibility which did not occur to the author; on the contrary, their intent seemed so self-evident that explanation was not thought of. Since, however, one writer does not "see how they can be of much use to the student of oölogy," and inquires why, "if considered of value—were they not given uniformly throughout the work," it may be stated here that these brief descriptions are given only (or at least mainly) in cases where some particular style of nest or coloration of eggs is characteristic of a group (family or genus), as a sort of accessory or supplemental group character,<sup>1</sup> and that the numerous instances of their omission result either from the absence of anything specially characteristic or distinctive or else (as is often the case among the tropical forms) from lack of information on the subject.

Placing the accent marks to names of localities in Mexico and other parts of Spanish America may possibly be criticized on the ground of inexpediency or that of irregularity in following the rules governing such cases; but the author has been led to do so by the apparent natural tendency of English-speaking people to sadly mispronounce such names, even when spelled precisely the same in Spanish and English; for example: Bogotá (Bo-go-tah'), David (Dah-veed'), Ecuadór (Ek-wah-dör'), Salvadór (Sal-vah-dör'), General (Hen-er-ahl'), and Trinidad (Tre-ne-dad'), which in English (at least commonly) are pronounced Bo-gó-tah, Dā'-vid, Ek'-wa-dor, Sal'-va-dor, Gén-er-al and Trín-i-dad, respectively. There are, of course, definite rules of accentuation in the Spanish language, but these are unknown to most Americans and other English-speaking people, and therefore the accent is frequently given where the rules do not require it. In a majority of cases, where the accent mark does not appear the accent is normal, that is, the emphasis falls on the penultimate syllable.<sup>2</sup> Other cases where the accent is omitted are those words in which the Spanish accent agrees with the prevalent English one; as Nicaragua, Venzeuela, Yucatan, etc. In one case (that of Santa Fé) general usage is followed, although the accent mark is, of course, wholly superfluous in a word of only one syllable.

ROBERT RIDGWAY.

JULY 26, 1911.

<sup>1</sup> For example, see genera *Petrochelidon*, *Dulus*, *Psaltiriparus*, and *Regulus*, and family Vireonidæ, pages 45, 126, 424, 698, and 129, in Part III.

<sup>2</sup> It should be remembered that each vowel represents a distinct syllable in every Spanish word; "pié" is not *py*, for instance, but *pe-â'*.





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# THE BIRDS

OF

## NORTH AND MIDDLE AMERICA.

By ROBERT RIDGWAY,  
*Curator, Division of Birds.*

### Part V.

Superfamily MESOMYODI.<sup>a</sup>

MESOMYODIAN PASSERES.

(Continued.)<sup>a</sup>

- = *Tracheophones* MÜLLER, Abh. k. Ak. Wiss. Berlin, 1846, 1847, 383 (=Formicariidæ + Pteroptochidæ + Furnariidæ + Dendrocolaptidæ).—NEWTON, Dict. Birds, pt. iv, 1896, 985.
- < *Tracheophones* CABANIS, Wiegmann's Archiv für Naturg., 1847, pt. i, 209 (=Formicariidæ, part + Furnariidæ + Dendrocolaptidæ).
- < *Tracheophonæ* SCLATER, Cat. Am. Birds, 1862, 146 (includes Oligomyodi!).
- = *Tracheophonæ* HUXLEY, Proc. Zool. Soc. Lond., 1867, 471.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, pp. vi, 61.—GARROD, Proc. Zool. Soc. Lond., 1877, 452.—FORBES, Proc. Zool. Soc. Lond., 1880, 391.—SCLATER, Ibis, 1880, 349.—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1891, 145.
- × *Tracheophonæ* GARROD, Proc. Zool. Soc. Lond., 1873, 463 (Pittidæ + Rupicolidæ, + Cotingidæ + Tyrannidæ + Pteroptochidæ + Menuridæ!).
- < *Anabatidæ* CABANIS, Wiegmann's Archiv für Naturg., 1847, pt. i, 338 (=Furnariidæ + Dendrocolaptidæ).
- < *Anabatidæ* CABANIS and HEINE, Mus. Hein., ii, 1860, 22.—LILLJEBORG, Proc. Zool. Soc. Lond., 1866, 16 (=Furnariidæ + Dendrocolaptidæ).
- = *Formicaroidæ* STEJNEGER, Stand. Nat. Hist., iv, 1885, 476, in text.
- = *Formicaroidæ* COPE, Am. Nat., xxiii, Oct., 1889, 873.
- < *Formicariidæ* GADOW, Bronn's Thier-Reichs, Vög., ii, 1893, 276, 301 (=Formicariidæ + Furnariidæ + Dendrocolaptidæ).
- < *Dendrocolaptinæ* GADOW, Bronn's Thier-Reichs, Vög., ii, 1893, 276 (=Dendrocolaptidæ + Furnariidæ).
- < *Pteroptochidæ* GADOW, Bronn's Thier-Reichs, Vög., ii, 1893, 277, 301 (=Pteroptochidæ + Conopophagidæ).

The characters of the Tracheophone Mesomyodi were briefly given on pages 331 and 332, Part IV, of the present work. The group is

<sup>a</sup> See Part IV, pages 328-332 of this work.



now considered in detail, and a new key to the families presented, based upon more extended or special study.

#### CHARACTERS OF THE TRACHEOPHONE MESOMYODI.

Mesomyodian Passeres with (usually) a single pair of syringeal muscles, attached to the middle portion of the bronchial semirings, the syrinx tracheal, the lower end of the trachea consisting of thin, membranous walls, about six of the usual semirings extremely thin, sometimes obsolete, the bronchi with both outer and inner tympaniform membranes, vibratory tracheal membranes being also present, the few muscles (usually only one pair) wholly lateral (being thus specially modified as a vocal organ;)<sup>a</sup> feet schizopelmous; tensor patagii brevis passerine.

The Tracheophone Passeres are (excepting the small family Xenicidæ of New Zealand) a purely Neotropical group of birds, though, like many others, entirely absent from the Antillean Subregion. The various members bear a more or less close resemblance in external appearance as well as in habits to certain Oscinine families, though very distinct in their internal structure. Thus, among the Formicariidæ (Antbirds), some forms closely resemble Shrikes (Laniidæ), others Wrens (Troglodytidæ), and others again are strikingly similar to the Pittas (Pittidæ)<sup>b</sup> in form, though lacking entirely the beautiful coloration of the latter. The Dendrocolaptidæ and Furnariidæ embrace species which, so far as external appearance goes, might pass readily for Tree Creepers (Certhiidæ), Thrushes (Turdidæ), or even Larks (Alaudidæ); the smaller Pteroptochidæ are conspicuously wrenlike, while some of the Conopophagidæ are not very unlike Pipits (Motacillidæ). While they vary greatly in size, form, and

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<sup>a</sup> This peculiar structure of the organs of voice is thus described by its discoverer, Johannes Müller ("Ueber die bisher unbekannten typischen der Stimmorgane der Passerinen" (title incomplete), von J. Müller, Berlin, 1847): "The lower end of the trachea is flattened anteriorly and posteriorly; its walls are thin and membranous and contain extremely fine anterior and posterior half-rings, which are fastened at the sides by long elastic bands. The position of these half-rings is altered by the muscles attached to their sides. In all these birds the cartilaginous *passulus* in the furcation of the trachea is wanting, and is replaced by a tendinous strap. The *membrana tympaniformis* passes over from one bronchus to the other. The bronchi contain half rings only. The membranous wall of the voice organ consists of two thin transparent membranes, of which the inner one is the mucous membrane."

By Professor Alfred Newton it is described (Dictionary of Birds, Part iv, p. 940) as follows: "The lower portion of the Trachea consists of thin membranaceous walls, about six of the rings being extremely thin or, as often happens, deficient. Both inner and outer tympaniform membranes exist in the Bronchi as well as some vibratory tracheal membranes. The few muscles, generally but one pair, are wholly lateral. The birds thus furnished are the TRACHEOPHONÆ; their voice is very loud, and while it is being sounded the lower part of the throat swells out."

<sup>b</sup> This, however, not an Oscinine family, but a member of the Oligomyodean or Haplophone group of Mesomyodi.

habits, a plain coloration characterizes the entire group, not a single species possessing a brilliant plumage, while the majority are among the duller colored of birds. They are mostly forest birds, though the Pterotochidæ and some of the Furnariidæ inhabit bushy tracts or even more open places. The Pterotochidæ, Conopophagidæ, and Formicariidæ are chiefly terrestrial, but the Dendrocolaptidæ and many of the Furnariidæ glean their food from the trunks of forest trees, in the manner of Woodpeckers and Creepers.

In Dr. Slater's catalogue of the Tracheophonæ,<sup>a</sup> 559 species are recognized; but since this number represents only those that were autoptically known to the author it may safely be assumed that the actual number of recognizable forms, including subspecies, is not far from 800.<sup>b</sup>

#### KEY TO THE FAMILIES OF TRACHEOPHONÆ.

- a. Only one pair of tracheo-bronchial muscles; metasternum 4-notched, or else (in Formicariidæ) tensor patagii brevis tendon normally passerine and nares holorhinal; tarsal envelope not exaspidean (endaspidean, taxaspidean, or holaspidean).
- b. Metasternum 4-notched; tensor patagii brevis tendon quasi-picarian.<sup>c</sup>
- c. Interorbital septum perforate; postorbital process small, placed low down on side of skull; maxillo-palatines long and slender, curved backward; vomer short, with long limbs; intrinsic muscles present; sterno-trachealis not attached to processus vocales; palate ægithognathous (oscinine); mesorhinium compressed and arched or else expanded into a flattened oval shield; nostrils conspicuously operculate; tarsal envelope taxaspidean or holaspidean.

#### Pterotochidæ (p. 4)

<sup>a</sup>Catalogue | of the | Passeriformes, | or | Perching Birds | in the | Collection | of the | British Museum. | — | Tracheophonæ, | or the Families | Dendrocolaptidæ, | Formicariidæ, | Conopophagidæ, and Pterotochidæ. | By | Philip Lutley Slater. | London: | Printed by order of the Trustees. | 1890.—8vo, pp. xviii × 372, pl. xx. (Volume XV of the "Catalogue of the Birds in the British Museum.")

<sup>b</sup>In Sharpe's Hand List of the Genera and Species of Birds (vol. iii, 1901, pp. 4-87) the number of forms recognized as belonging to the American Families alone is 799, as follows:

|                      | Species. | Genera. |
|----------------------|----------|---------|
| Pterotochidæ.....    | 31       | 8       |
| Conopophagidæ.....   | 16       | 2       |
| Formicariidæ.....    | 347      | 38      |
| Furnariidæ.....      | 278      | 37      |
| Dendrocolaptidæ..... | 127      | 14      |
| Total.....           | 799      | 99      |

The enumeration of species, however, includes subspecies, which are not distinguished typographically or otherwise in the list. The Furnariidæ and Dendrocolaptidæ are treated as one family, as in the British Museum catalogue.

<sup>c</sup>The returning portion concealed by the muscular fibers at the origin of the extensor metacarpi muscle. (See Stejneger, Standard Nat. Hist., Birds, p. 476.)

- cc. Interorbital septum wanting; postorbital process wanting; maxillo-palatine long, narrow, angulated, continued backward to the level of the median descending plate of the palatine; intrinsic muscles wanting; sternotrachealis not attached to processus vocales; palate schizognathous; mesorhinium normal; nostrils not conspicuously operculate; tarsal envelope exaspidæan..... **Conopophagidæ** (extralimital).<sup>a</sup>
- bb. Metasternum 2-notched; tensor patagii brevis tendon normally passerine.<sup>b</sup>  
**Formicariidæ** (p. 8).
- aa. Two pairs of tracheo-bronchial muscles; metasternum 2-notched; tarsal envelope endaspidæan.
- b. Nares schizorhinal; maxillo-palatines long and slender, continued backward to or beyond level of the free end of the median descending plate of the palatine; interorbital septum perforate; palate schizognathous; outer toe decidedly (usually much) shorter than middle toe and not conspicuously longer than inner toe (except in *Sclerurus* and *Pygarrhicus*) and united to middle toe for not more (usually less) than whole length of basal phalanx of the latter; hallux (without claw) as long as inner toe (without claw) or longer, much stouter.  
**Furnariidæ** (p. 157).
- bb. Nares holorhinal; maxillo-palatines short and broad, crossing posterior end of olfactory fossa and terminating immediately in front of the descending plate of the palatine; interorbital septum imperforate; palate ægithognathous or semi-desmognathous; outer toe as long as middle toe, much longer than inner toe, united to middle toe for more than whole length of basal phalanx of the latter; hallux (without claw) shorter than inner toe (without claw), little, if any, stouter..... **Dendrocolaptidæ** (p. 224).

### Family PTEROPTOCHIDÆ.

#### THE TAPACULOS.<sup>c</sup>

=*Rhinomydæ* D'ORBIGNY Voy. Am. Mérid., iv, part 3, 1839, 192.

>*Pteroptochidæ* CABANIS and HEINE, Mus. Hein., ii, 1860, 20 (includes *Menuridæ*).

=*Pteroptochidæ* SCLATER, Cat. Am. Birds, 1862, 168.—CARUS, Handb. der Zool., 1863, 268.—GARROD, Proc. Zool. Soc. Lond., 1877, 452.—STEJNEGER, Stand. Nat. Hist., iv, 1885, 476.—SALVIN and GODMAN Biol. Centr.-Am., Aves, ii, 1892, 246.

=*Pteroptochinæ* CABANIS and HEINE, Mus. Hein., ii, 1860, 20.—GADOW, Bronn's Thier-Reichs, Vög., ii, 1891, 277.

=*Scytalopodidæ* HUXLEY, Proc. Zool. Soc. Lond., 1867, 471, in text.

=*Scytalopodinæ* SUNDEVALL, Met. Nat. Av. Disp. Tent., ii, 1872, 65 (English translation, 1889, 134).

Tracheophone Mesomyodian Passeres with the metasternum 4-notched; interorbital septum perforate; postorbital processes small,

<sup>a</sup>=*Conopophaginæ* Sclater and Salvin, Nom. Av. Neotr., 1873, 41; Gadow, Bronn's Thier-Reichs, Vög., ii, 1891, 277.=*Conopophagidæ* Garrod, Proc. Zool. Soc. Lond., 1877, 452; Forbes, Proc. Zool. Soc. Lond., 1881, 436, 438; Stejneger, Stand. Nat. Hist., iv, 1885, 476; Cope, Am. Nat., xxiii, 1889, 873; Salvin and Godman, Biol. Centr.-Am., Aves, ii, 1892, 245.

A small group of two genera and about sixteen species, peculiar to South America, from Colombia to Guiana, southeastern Brazil, Bolivia, and Peru.

<sup>b</sup>The returning portion not concealed by the muscular fiber at the origin of the extensor metacarpi muscle, but the two tendons of this portion clearly exposed to view. (See Stejneger, Standard Nat. Hist., Birds, p. 459 and fig. A on p. 458.)

<sup>c</sup>A Spanish (Chilean) vernacular name, from the characteristic habit of the various species of this group of carrying the tail conspicuously elevated and thrown forward.



placed low down on side of skull; maxillo-palatines long and slender processes, curved backward; vomer short, with long limbs; nares holorhinal; tensor patagii brevis masked passerine or quasi-picarian; one pair of tracheo-bronchial muscles, the intrinsic muscles present; sterno-trachealis attached to processus vocales; palate ægithognathous (oscinine); mesorhinium compressed and arched, or expanded into a flattened oval shield; nostrils conspicuously operculate; tarsal envelope taxaspidean.

Externally, the Pteroptochidæ are characterized by their wren-like appearance (though with the bill relatively shorter and stouter than in the true wrens), large and strong feet (which are excessively developed in some genera), short, very concave, and much rounded wing (with 10 primaries), and, usually, short or very short tail, which is usually carried erect or thrown forward. Of terrestrial or semi-terrestrial habits they are well adapted to hopping or running on the ground; but their power of flight is very limited, the birds of this family being able to fly but a short distance. They are very active, inquisitive, and noisy birds, and their notes are varied and remarkable, but harsh and loud rather than musical.

The Pteroptochidæ are peculiar to the more southern portions of the Neotropical Region, the high mountains of Costa Rica, where a single representative occurs, being the northern limit; only seven of the thirty-one species and two of the eight known genera occur in the elevated districts of Colombia, the remainder occurring in the Andean district of Ecuador, Peru, and Chile, and thence to the Falkland Islands, Argentina, and southeastern Brazil, two of the Colombian species (belonging to separate genera) extending as far eastward as the higher mountains of Venezuela.

In Volume XV of the Catalogue of the Birds in the British Museum (1890, pp. 337-352) Dr. Sclater recognizes eight genera and twenty-one species; but Dr. Sharpe, in his Hand List of the Genera and Species of Birds (Vol. III, 1901, pp. 4-7), increases the number of species to thirty-one.

#### Genus SCYTALOPUS Gould.

*Scytalopus* GOULD, Proc. Zool. Soc. Lond., 1836, 89. (Type, *S. fuscus* Gould=*Motacilla magellanica* Gmelin.)

*Sylviaxis* LESSON, Rev. Zool., 1840, 274. (Type, *S. guttatus* Lesson=unidentified species).

*Agathopus* SCLATER, Proc. Zool. Soc. Lond., 1858, 69. (Type, *A. micropterus* Sclater=*Merulaxis analis* Lafresnaye?)

Small wren-like Pteroptochidæ (length about 100 to 130 mm.) with the mesorhinium compressed and slightly arched, loreal feathers short, tail much shorter than wing, tarsal envelope distinctly scutellate, and hind claw strongly curved and shorter than the digit.



Bill much shorter than head (exposed culmen about as long as hallux, without claw), narrowly conoidal in lateral profile, its depth at base of exposed culmen equal to less than half the length of the latter; culmen flattened, very slightly to moderately decurved terminally, more or less distinctly depressed in middle portion, the basal half (mesorhinium) more compressed and more or less distinctly elevated or arched; gonys longer than mandibular rami, more than half as long as exposed culmen, rounded, slightly but distinctly convex; maxillary tomium more or less distinctly notched subterminally. Nostril narrowly cuneate or linear, longitudinal, overhung by a broad operculum. No rictal, frontal, nor mental bristles. Wing excessively rounded, very concave beneath; sixth, fifth, and seventh primaries longest (nearly equal in length), the tenth (outermost) more than half as long as the longest; all the remiges very broad, rather soft in texture; longest secondaries extending beyond tip of ninth primary. Tail decidedly to much shorter than wing to end of secondaries, excessively graduated, the rectrices (10 in number) very broad, soft, with webs semi-decomposed. Tarsus much less than half as long as wing (about twice as long as bill), its scutellation taxaspidean or semi-holaspidean (the outer series of plantar scutella much broader than the inner); middle toe, without claw, decidedly shorter than tarsus (about as long or slightly longer with claw); lateral toes about equal in length, reaching (without claw) to or very slightly beyond penultimate articulation of middle toe; hallux (without claw) longer than lateral toes and much stouter, its strongly arched claw shorter than the digit; outer toe united to middle toe only at extreme base, the inner toe entirely separated. Plumage compact but very soft (almost silky), that of the rump and flanks more elongated and lax.

*Coloration*.—Adult males nearly uniform gray or dusky, with hinder parts more or less rufescent and (usually) barred, sometimes with the forehead silvery gray, some species with throat or throat and breast white; adult females similar but duller in color and more barred; young very different, rusty or brown prevailing, conspicuously barred.

*Nidification*.—"The nest is placed in a mass of moss on a bank; it is also composed entirely of moss. The female lays two eggs, large for the size of the bird, and white." (*S. magellanicus* Salmon, Proc. Zool. Soc. Lond., 1879, 528.)

*Range*.—High mountains of Costa Rica to Falkland Islands, southern Chile and Argentina, southeastern Brazil, and mountains of Venezuela. (About eighteen species and subspecies known.)

## SCYTALOPUS ARGENTIFRONS Ridgway.

## SILVERY-FRONTED SCYTALOPUS.

*Adult male*.—Forehead and superciliary region silvery gray (no. 6 or no. 7 gray <sup>a</sup>); rest of upper parts plain sooty black, the feathers of rump tipped, more or less distinctly, with dark rusty brown or chestnut; sides of head, anterior portion of forehead, chin, throat, and chest plain deep slate color or blackish slate, the color usually darker around eye (especially between eye and the silvery gray of superciliary region); slate color of chest gradually changing to paler, or slate-gray, on breast, this into light silvery gray (sometimes tinged with fulvous) on abdomen; sides rather darker slate color than chest; flanks, anal region, and under tail-coverts sooty black, the feathers conspicuously tipped or terminally margined with deep rusty brown or russet; maxilla brownish black, mandible more brownish; legs and feet deep horn brownish (in dried skins); length (skins), 102–114 (107.5); wing, 51.5–54 (52.9); tail, 34.5–40 (35.8); culmen, 11–12 (11.6); tarsus, 20–21 (20.8); middle toe, 16.5–17.5 (17.1).<sup>b</sup>

*Adult female*.—Similar to the adult male but gray U-shaped frontal and superciliary mark obsolete or entirely wanting; feathers of all the upper parts broadly but indistinctly margined with dark brown; gray of under parts confined to chin, throat, and chest, the whole sides, flanks and under tail-coverts very broadly margined with russet, changing to buffy cinnamon on abdomen; bill, etc., as in adult male, but mandible lighter brownish; length (skins), 109–112 (110.5); wing, 50–52 (50.8); tail, 40–41.5 (40.7); culmen, 10.5–11.5 (11); tarsus, 19.5–21 (20.3); middle toe, 16.5–17.5 (17).<sup>c</sup>

High mountains of Costa Rica (Volcán de Irazú; Volcán de Poás; Coliblanco) and western Panamá (Boquete; Volcán de Chiriquí).

*Scytalopus argentifrons* RIDGWAY, Proc. U. S. Nat. Mus., xiv, no. 869, Oct. 31, 1891, 475 (Volcán de Irazú, Costa Rica; coll. U. S. Nat. Mus.); xvi, 1893, 613 (additional specimens described).—SALVIN and GODMAN, [Biol. Centr.-Am., Aves, ii, 1892, 246.—BANGS, Proc. New Engl. Zool. Club, iii, 1902, 48 (Boquete and Volcán de Chiriquí, Panamá, 5,000–7,000 ft.).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 594 (Ujurras de Terraba, Volcán de Irazú, La Estrella de Cartago, and Volcán de Turrialba, Costa Rica; crit.; habits).—FERRY, Pub. 146, Field Mus. N. H., orn. ser., i, no. 6, 1910, 271 (Coliblanco, Costa Rica).

[*Scytalopus*] *argentifrons* SHARPE, Hand-list, iii, 1901, 5.

<sup>a</sup> Ridgway's Nomenclature of Colors (ed. 1886,) plate 2.

<sup>b</sup> Five specimens from Costa Rica. An adult male from Boquete, Panama, measures: Wing, 51.5; tail, 40; tarsus, 20.5; middle toe, 17.

<sup>c</sup> Three specimens, from the Volcan de Irazú, Costa Rica.

## Family FORMICARIIDÆ.

## THE ANTBIRDS.

- Myiotheridæ* BOIE, Isis, 1826, 973.—HUXLEY, Proc. Zool. Soc. Lond., 1867, 471, in text.
- > *Eriodoridæ* CABANIS, Wiegmann's Archiv für Naturg., 1847, pt. i, 209, 336 (includes Pteroptochidæ, Pittidæ, and Menuridæ!).
- > *Formicariidæ* SCLATER, Proc. Zool. Soc. Lond., 1858, 202; Cat. Am. Birds, 1862 170 (includes Conopophagidæ).—CARUS, Handb. Zool., 1868, 268.
- < *Eriodoridæ* CABANIS and HEINE, Mus. Hein., ii, 1860, 11 (excludes Formicariidæ, part).
- × *Hypocnemididæ* CABANIS and HEINE, Mus. Hein., ii, 1860, 1 (includes Pittidæ and Conopophagidæ; excludes Formicariidæ, part).
- = *Formicariidæ* GARROD, Proc. Zool. Soc. Lond., 1877, 452.—STEJNEGER, Stand. Nat. Hist., iv, 1885, 477.—SALVIN and GODMAN, Biol. Centr.-Am., A es, ii, 1892, 193.
- = *Formicariinæ* GADOW, Bronn's Thier-Reichs, Vög., ii, 1891, 276.

Tracheophone Mesomyodian Passeres with the metasternum 2-notched, tensor patagii brevis tendon normally passerine, interorbital septum perforate, postorbital process large (sometimes joining the processus squamosi), maxillopalatines strap-shaped (crossing posterior end of the olfactory fossa and passing backward beyond the level of the median descending plate of the palatine); vomer long and broad; nares holorrhinal, the anterior nares inclosed by a bony wall, leaving a wide aperture at proximal end of nasal fossa between the premaxillary and the descending process of the nasal; syrinx tracheal, one pair of tracheo-bronchial muscles arising from the trachea and attached to one or more of the bronchial semirings, or else one pair inserted on distal end of the trachea; mesorhinium normal; nostrils not conspicuously (often not at all) operculate; tarsal envelope taxaspidean or holaspidean, or fused (nonscutellate); basal phalanx of middle toe more or less united to lateral toes, usually for at least half its length to outer toe, for less than half to inner toe, in some genera also united for part of second phalanx to outer toe; outer toe decidedly shorter than middle toe and slightly longer than inner toe; hallux as long as inner toe or slightly to decidedly shorter, slightly stouter to much stouter; claws moderate in size and curvature to short and slightly curved, that of the hallux always shorter than the digit; maxilla with tip more or less conspicuously uncinatè, with distinct subterminal tomial notch, the mandibular tomium also notched subterminally (this notch sometimes minute or indistinct, however). Wing moderate in size to rather large, more or less conspicuously concave beneath, always much rounded, but usually with longer primaries extending decidedly beyond secondaries; tenth (outermost) primary never more than three-fourths as long as the longest, usually about three-fifths to two-thirds as long. Tail variable as to relative length, rarely longer than wing, usually shorter



(sometimes less than half as long), the rectrices (usually 12, but sometimes only 10) usually rounded, never acuminate, terminally.

The Formicariidæ comprise one of the larger groups of birds peculiar to the Neotropical region, but, like several others of the same class, wholly absent from the Antillean Subregion. The group is well represented in the whole of the extensive territory extending from Costa Rica to southern Brazil, but reaches its greatest development in number of species and genera in the great valley of the Amazon and the Guianas. Dr. Sclater<sup>a</sup> recognizes 250 species belonging to 33 genera—numbers considerably less than those that are actually known at the present time.<sup>b</sup>

Among so great a number of species and genera there is, naturally, great variation in size and form. The smallest are no larger than a Gnatcatcher (*Polioptila*), while the largest are fully equal to an average-sized Jay; some resemble Shrikes, others Thrushes, Wrens, Dippers, or other oscinine groups in their general appearance. They are nearly all birds of plain plumage, none having any brilliant colors, and most of the species are terrestrial, or nearly so, feeding, as their name implies, largely upon ants, though perhaps less extensively so than has been supposed; it having been stated by competent observers that some species subsist more upon various forms of insect life which the immense armies of ants, as they march across the forest floor, startle from their hiding place among the dead leaves, etc., over which they pass.

Notwithstanding their mesomyodian larynx, many of the Formicariidæ are good songsters, some of them being conspicuous for their vocal powers.

The classification of this group is very difficult, more so probably than in the case of any other American family of birds. Indeed it may be truly said that even the most recent attempts to present an orderly and natural sequence of the genera are very far from satisfactory. My effort to bring order out of chaos can be considered as only partially successful, but it is hoped that some improvement at least has been made in that direction. Undoubtedly better results would have been reached had a better representation of the genera and species been available; but unfortunately there are very many species and several recognized genera which I have not been able to examine in this connection. As in the case of many other groups, the segregation of the species into genera has been based far too much on general resemblance, and too little attention paid to structural characters. This may be said of nearly every group of birds; but in the present instance it is difficult to understand how certain associations could have been made.

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<sup>a</sup> Catalogue of the Birds in the British Museum, vol. xv, 1890, pp. 177-328.

<sup>b</sup> In his Hand-List of the Genera and Species of Birds (vol. iii, 1901, pp. 9-45) Dr. Sharpe enumerates 347 species and 38 genera.



KEY TO THE GENERA OF FORMICARIIDÆ.<sup>a</sup>

- a. Planta tarsi compressed and more or less sharply ridged behind, consisting of two parallel rows of scutella or undivided lamina, whose line of contact forms a median posterior ridge. (*Formicariinæ*.)
- b. Second phalanx of middle toe entirely free from outer toe; acrotarsium more or less distinctly scutellate (at least on inner side).
- c. Nostril oval or roundish, pierced directly into the completely ossified nasal fossæ, without trace of operculum or adjacent membrane. (*Thamnophilæ*.)
- d. Bill more swollen and relatively shorter and broader, its depth at frontal antiæ much more than one-third the length of the commissure.
- e. Tail shorter than wing; tarsus shorter than commissure; plumage narrowly barred, above and below. . . . . **Cymbilaimus** (p. 18).
- ee. Tail much longer than wing; tarsus longer than commissure; plumage spotted above, nearly unicolored (not barred) below.
- Hypœdaleus** (extralimital).<sup>b</sup>
- dd. Bill less swollen, relatively longer and narrower, or else more compressed, its depth at frontal antiæ much less than one-third the length of commissure.
- e. Tail much longer than wing.
- f. Bill relatively longer (exposed culmen longer than middle toe without claw), much stronger, less tapering terminally, the unguis larger and more abruptly hooked; upper parts transversely barred; very large (total length 300 mm. or more) . . . . . **Batara** (extralimital).<sup>c</sup>
- ff. Bill relatively smaller (exposed culmen not longer than middle toe without claw), much weaker, more tapering terminally, the unguis smaller and weaker; upper parts spotted (not barred) or immaculate; smaller (total length not more than 250 mm.).

<sup>a</sup> In order to show more clearly the relationship of the various groups, a number of extralimital (South American) genera are included. My efforts have been handicapped by the lack of many species desired for comparison, among which are the types of the following generic or subgeneric names:

- Neotantes* Sclater. (Type, *Xenops niger* Pelzeln.)
- Myrmophila* Cabanis and Heine. (Type, *Formicivora brevicauda* Swainson.)
- Terenura* Cabanis and Heine. (Type, *Myiothera maculata* Maximilian.)
- Psilorhamphus* Sclater. (Type, *Leptorhynchus guttatus* Ménétriés.)
- Microbates* Sclater and Salvin. (Type, *Rhamphocænus collaris* Pelzeln.)
- Myrmochanes* Allen. (Type, *M. hypoleucus* Allen.)
- Rhopornis* Richmond. (Type, *Myiothera ardesiaca* Maximilian.)
- Sclateria* Oberholser. (Type, *Sitta naevia* Gmelin.) See footnote on p. 16.
- Pernostola* Cabanis and Heine. (Type, *Lanius funebris* Lichtenstein.)
- Thamnocharis* Sclater. (Type, *Grallaria dignissima* Sclater and Salvin.)
- Grallaria* Vieillot. (Type, *Formicarius varius* Boddaert.)

The genus *Terenura*, although represented in the geographic field covered by this work, is necessarily omitted from the "key," because I have not been able to examine a specimen of any species. (See p. 83.)

<sup>b</sup> *Hypœdaleus* Cabanis and Heine, Mus. Hein., ii, Aug., 1859, 18. Type, *Thamnophilus guttatus* Vieillot. (Southeastern Brazil; monotypic.)

<sup>c</sup> *Batara* Lesson, Traité d'Orn., 1831, 347. Type, *Vanga striata* Quoy and Gaimard = *Thamnophilus cinereus* Vieillot. — *Thamnarchus* Cabanis and Heine, Mus. Hein., ii, 1859, 19. Type, *Thamnophilus cinereus* Vieillot. (*Batara* rejected on grounds of purism.) (Southeastern Brazil; monotypic.)

- g. Tail one and a half times as long as wing; not crested; spotted above in both sexes. .... *Nisius* (extralimital).<sup>a</sup>
- gg. Tail much less than one and a half times as long as wing; conspicuously crested; not spotted above (adult male wholly dusky, female barred with blackish and rusty). *Lochites* (extralimital).<sup>b</sup>
- ee. Tail little if any longer (usually much shorter) than wing.
- f. Toes relatively shorter, the middle toe (without claw) not longer than distance from nostril to tip of maxilla, or else tail not more than two-thirds as long as wing, and wings and tail conspicuously spotted.
- g. Tail much less than two-thirds as long as wing, truncated.  
*Pygiptila* (extralimital).<sup>c</sup>
- gg. Tail at least two-thirds as long as wing, much rounded or graduated.
- h. Tail not more than two-thirds as long as wing; bill relatively smaller, the distance from nostril to tip of maxilla less than length of middle toe without claw; wings, tail, and upper tail-coverts conspicuously spotted with white (adult male) or buffy (female). .... *Megastictus* (extralimital).<sup>d</sup>
- hh. Tail more than two-thirds as long as wing; bill relatively larger, the distance from nostril to tip of maxilla greater than length of middle toe without claw; wings, tail, and upper tail-coverts with minute white or buffy spots or none at all.
- i. Plumage without spots, streaks or bars (plain brownish or olive above, yellowish olive below, the wings and tail rufescent; tail much shorter than wing). .... *Thamnistes* (p. 21).
- ii. Plumage more or less spotted or streaked (adult male black with white dots on wing-coverts and small white tip to lateral rectrices, female slate color or olive, streaked with whitish; tail nearly as long as wing). .... *Abalius* (p. 24).
- ff. Toes relatively longer, the middle toe (without claw) longer than distance from nostril to tip of maxilla; (tail more than two-thirds as long as wing).
- g. Bill relatively much larger and stronger (exposed culmen equal to or longer than middle toe with claw), more strongly uncinat; crest more conspicuously developed.
- h. Bill more compressed, its width at frontal antiæ much less than its depth at same point, and equal to less than half the distance from nostril to tip of maxilla; larger (total length about 200 mm.); under parts white, the adult male black, the female rufous-brown, above with more or less of white on wings.  
*Taraba* (p. 27).
- hh. Bill less compressed, its width at frontal antiæ nearly if not quite equal to its depth at same point and equal to at least half the distance from nostril to tip of maxilla; smaller (total length not more than 170 mm.); under parts not white (except, sometimes, in part).

<sup>a</sup> *Nisius* Reichenbach, Av. Syst. Nat., 1850, pl. 71. Type, *Thamnophilus leachii* Such. (Southeastern Brazil and northern Argentina; monotypic?)

<sup>b</sup> *Lochites* Cabanis and Heine, Mus. Hein., ii, Aug., 1859, 18. Type, *Lanius severus* Lichtenstein. (Southeastern Brazil; monotypic?)

<sup>c</sup> *Pygiptila* Scater, Proc. Zool. Soc. Lond., 1858, 220. Type, *Thamnophilus maculipennis* Scater. (Upper Amazons; monotypic.)—*Pygoptila* (emendation) Cabanis and Heine, Mus. Hein., ii, 1859, 15.

<sup>d</sup> *Megastictus* Ridgway, Proc. Biol. Soc. Wash., xxii, Apr. 17, 1909, 69. Type, *Myrmeciza margaritata* Scater. (Upper Amazons; monotypic.)

- i. Tail more graduated; larger (total length about 170 mm.); adult male wholly black below..... **Othello** (extralimital).<sup>a</sup>
- ii. Tail less graduated; smaller (total length less than 150 mm.); adult males with sides and flanks white or grayish.

**Hypolophus** (p. 32).

- gg. Bill relatively much smaller and weaker (exposed culmen shorter than middle toe with claw), less strongly uncinate; crest less conspicuously developed.

- h. Tail at least four-fifths as long as wing; larger and stronger forms.

- i. Bill larger and stouter, the exposed culmen much more than half as long as tarsus.

- j. Feathers of forehead much developed, the crest occupying entire pileum; male with a white throat-patch and black jugular area, the remaining under parts fulvous.

**Biatas** (extralimital).<sup>b</sup>

- jj. Feathers of forehead short, semi-decomposed, the crest confined to crown and occiput; adult males with under parts barred with black and white, or else uniform gray or slate color (rarely streaked with white).

- k. Bill more swollen, with tip less compressed, its width at frontal antiæ equal to its depth at same point, and equal to much more than half the distance from nostril to tip of maxilla; adult males conspicuously barred with black and white, or gray streaked with white, beneath, females rufous above.

**Thamnophilus** (p. 34).

- kk. Bill less swollen laterally, more compressed terminally, its width at frontal antiæ less than its depth at same point and equal to not more than half the distance from nostril to tip of maxilla; adult males plain gray, slate color, or black below, females gray, olive, or brown above.

**Erionotus** (p. 47).

- ii. Bill smaller and more slender, the exposed culmen not more than half as long as tarsus, its depth at frontal antiæ equal to not more than half the distance from nostril to tip of maxilla.

**Rhopochares** (extralimital).<sup>c</sup>

- hh. Tail less than three-fourths as long as wing; smaller and weaker forms..... **Dysithamnus** (p. 52).

- cc. Nostril more or less narrow and longitudinal, more or less distinctly operculate, or if broadly oval or roundish the remainder of nasal fossæ occupied by membraneous integument.

- d. Plumage softer, more lax, and semi-decomposed, especially on rump. (*Formicivora*.)

- e. Planta tarsi distinctly scutellate, at least on inner side or posterior margin.

<sup>a</sup> *Othello* Reichenbach, Av. Syst. Nat., 1850, pl. 71. Type, *Lanius luctuosus* Lichtenstein. (Amazon Valley; monotypic?) [I have not been able to examine *T. leuconotus* Spix, *T. æthiops* Sclater, *T. tschudi* Pelzel, nor *T. melanochrous* Sclater and Salvin, which Dr. Sclater places in the same "section" with *T. luctuosus*.]

<sup>b</sup> *Biastes* (not of Panzer, 1806) Reichenbach, Handb., 1853, 175. Type, *Anabates nigropectus* Lafresnaye.—*Biatas* Cabanis and Heine, Mus. Hein., ii, Aug., 1859, 19 (new name for *Biastes* Reichenbach, preoccupied). (Southeastern Brazil; monotypic.)

<sup>c</sup> *Rhopochares* Cabanis and Heine, Mus. Hein., ii, Aug., 1859, 17. Type, *Thamnophilus torquatus* Swainson. (Paraguay, Uruguay, Argentina, southeastern Brazil, and Bolivia; three species).



- f. Tail much shorter than wing (not more than three-fourths as long, usually much less).
- g. Tail little if any more than half (sometimes much less than half) as long as wing.
- h. Bill small and very slender, the exposed culmen shorter than middle toe without claw.....**Rhopias** (extralimal).<sup>a</sup>
- hh. Bill larger and stouter, the exposed culmen longer than middle toe without claw.
- i. Planta tarsi scutellate on each side; maxilla slightly decurved terminally; gonydeal angle very slight; plumage streaked; no white band across rump.....**Myrmotherula** (p. 60.)
- ii. Planta tarsi scutellate on posterior portion of outer side only; maxilla straight throughout (only the extreme tip decurved); gonydeal angle prominent; plumage spotted; a white band across rump.....**Dichrozona** (extralimal).<sup>b</sup>
- gg. Tail much more than half to more than two-thirds as long as wing.  
**Myrmopagis** (p. 65).
- f. Tail nearly as long as wing, sometimes longer.
- g. Nostril slit-like, much narrower than the broad operculum; tarsus nearly half as long as wing. (Rectrices 10.)
- h. Rictal bristles obsolete; feathers of chin and forehead without trace of terminal setæ; tarsus much less than twice as long as middle toe without claw, the plantar scutella very distinct on both sides.  
**Rhoporchilus** (extralimal).<sup>c</sup>
- hh. Rictal bristles obvious (though small); feathers of chin and forehead with distinct terminal setæ; tarsus twice as long as middle toe without claw, the plantar scutella indistinct (especially on inner side).....**Myrmorchilus** (extralimal).<sup>d</sup>
- gg. Nostril broadly oval, much broader than the narrow (sometimes obsolete) operculum; tarsus less than half as long as wing.
- h. Rectrices 12.
- i. Pileum not black, or else back and rump also black; back, scapulars, and rump brownish slate, brown, rufescent, or black, concolor with pileum; adult male with at least chin, throat, chest, and part of breast black.....**Microrhopias** (p. 75).
- ii. Pileum (in adult male) black, conspicuously contrasted with bluish gray of back, scapulars, and rump; chin and throat

<sup>a</sup> *Rhopias* Cabanis and Heine, Mus. Hein., ii, 1859, 13. Type, *Thamnophilus gularis* Spix. (Southeastern Brazil; monotypic?) [Possibly *Myrmothera guttata* Vieillot (*Myrmotherula guttata* Sclater), of Cayenne and Guiana, may be congeneric, but I have not been able to examine that species.]

<sup>b</sup> *Dichrozona* Ridgway, Proc. U. S. Nat. Mus., x, sig. 33, Aug. 6, 1888, 524, footnote. Type, *D. zononota* Ridgway = *Cyphorinus* (*Microcerculus*) *cinctus* Pelzel.

<sup>c</sup> *Rhoporchilus* Ridgway, Proc. Biol. Soc. Wash. xxii, April 17, 1909, 69. Type, *Formicivora speciosa* Salvin. (Western Ecuador; monotypic.) The type species has been placed in both "*Formicivora*" (*Drymophila*) and *Synallaxis*, but is very distinct from either.

<sup>d</sup> *Myrmorchilus* Ridgway, Proc. Biol. Soc. Wash., xxii, April 17, 1909, 69. Type, *Myiothera strigilata* Maximilian. (Southeastern Brazil; monotypic.)



- grayish white; under parts without black, except sometimes a jugular area..... *Herpsilochmus* (extralimital).<sup>a</sup>
- hh. Rectrices 10..... *Drymophila* (extralimital).<sup>b</sup>
- ee. Planta tarsi entire (fused).
- f. Bill decidedly longer than head, more than one-third as long as wing.
- g. Tail four-fifths as long as wing, graduated; exposed culmen longer than tarsus, the latter much less than half as long as wing.  
*Ramphocænus* (p. 84).
- gg. Tail but little more than half as long as wing, rounded; exposed culmen much shorter than tarsus, the latter nearly half as long as wing..... *Microbates* (p. 88).
- ff. Bill not longer than head (usually shorter), less than one-third as long as wing.
- g. Rictal bristles well developed.
- h. Rectrices 10; bill much narrower and relatively deeper at base; tarsus longer than commissure..... *Cercomacra* (p. 90).
- hh. Rectrices 12; bill much broader and more depressed at base; tarsus shorter than commissure.. *Thamnomanes* (extralimital).<sup>c</sup>
- gg. Rictal bristles indistinct (usually obsolete).
- h. Loral and frontal regions very densely feathered, the feathering erect, plush-like..... *Pyriglena* (extralimital).<sup>d</sup>
- hh. Loral and frontal regions normally feathered, scantily feathered, or sometimes naked.
- i. Frontal and loral regions normally (densely) feathered.
- j. Rictal region naked, postocular region wholly feathered; larger forms (total length about 125 mm.), with mostly plain coloration..... *Myrmoborus* (extralimital).<sup>e</sup>

<sup>a</sup> *Herpsilochmus* Cabanis, in Wiegmann's Archiv für Naturg., xiii, pt. i, 1847, 224. Type, *Myiothera pileata* Lichtenstein.—*Dendroaëcia* Bertoni, Aves Nuevas del Paraguay, 1901, 138. Type, *D. erythroptera* Bertoni = *Myiothera rufimarginata* Temminck. (Nearly the whole of tropical South America east of the Andes; about eleven species recognized, of which, however, the present writer has examined only four.) I am not able to find any structural characters separating *Herpsilochmus* from *Microhropias*.

<sup>b</sup> *Formicivora* (not *Formicivorus* Temminck, 1807) Swainson, Zool. Journ., ii, 1825, 145. Type, *Myiothera squamata* Lichtenstein.—*Drymophila* Such (ex Swainson), Zool. Journ., i, Jan., 1825, 559. Type, *D. variegata* Such = *Myiothera ferruginea* Lichtenstein.—*Ellipura* Cabanis, in Wiegmann's Archiv für Naturg., xiii, pt. i, 1847, 228. Type, *Myiothera ferruginea* Lichtenstein.—*Stipituropsis* Bertoni, Aves Nuevas del Paraguay, 1901, 141. Type, *S. archavaletæ* Bertoni = *Formicivora genæi* De Filippi.

<sup>c</sup> *Thamnomanes* Cabanis, in Wiegmann's Archiv für Naturg., xiii, pt. i, 1847, 230. Type, *Lanius caesioides* Lichtenstein. (Colombia and Guiana to southeastern Brazil and upper Amazon Valley; two species.)

<sup>d</sup> *Pyriglena* Cabanis, in Wiegmann's Archiv für Naturg., xiii, pt. i, 1847, 211. Type, *Lanius domicella* Lichtenstein = *Turdus leucopterus* Vieillot. (Ecuador and Peru to southeastern Brazil; five species recognized, of which the present writer has examined only *P. leucoptera* (Vieillot) and *P. atra* (Swainson).)

<sup>e</sup> *Myrmoborus* Cabanis and Heine, Mus. Hein., ii, July, 1859, 9. Type, *Pithys leucophrys* Tschudi. Besides the type species, I would refer the following to this genus: *M. myiotherinus* (Spix) and *M. lugubris* Cabanis; probably also *Hypocnemis schistacea* Sclater and *H. melanura* Sclater and Salvin, and possibly *H. melanopogon* Sclater, but these three species I have not seen.

- jj. Rictal region feathered, postocular region partly naked smaller forms (total length about 100 mm.) with coloration much variegated ..... **Hypocnemis** (extralimal).<sup>a</sup>
- ii. Frontal or loreal regions, or both, scantily feathered (sometimes quite bare).
- j. Loreal and suborbital regions (sometimes forehead and crown also) bare or but scantily bristled; adult males uniform black (with white markings on wing-coverts).
- Gymnocichla** (p. 97).
- jj. Loreal and suborbital regions feathered (only the postocular and rictal regions naked); adult males not black (or else without white markings on wing-coverts).
- l. Tail less than four-fifths as long as wing; bill stouter; nostrils smaller, more rounded; forehead more thinly feathered, the feathers semi-decomposed, semi-erect.
- Myrmeciza** (p. 103).<sup>b</sup>
- ll. Tail more than five-sixths as long as wing (sometimes longer than wing); bill more slender; nostrils larger, more longitudinal; forehead more densely feathered, the feathers more compactly webbed, decumbent.
- Myrmoderas** (extralimal).<sup>c</sup>
- dd. Plumage harder, very dense and compact, only the tail-coverts semi-decomposed or loose webbed.<sup>d</sup> (*Formicariæ*.)
- e. Tail less than two-thirds as long as wing; plumage of rump not abnormally long and dense; feathers of latero-frontal antæ short and dense, not antrorse, not extending above nostril; bill relatively longer and less depressed basally, the exposed culmen as long as middle toe without claw; under parts neither streaked nor barred.
- Formicarius** (p. 115).
- ee. Tail more than two-thirds as long as wing; plumage of rump very long and dense; feathers of latero-frontal antæ longer, antrorse, extending anteriorly, above the nostril, to anterior end of nasal fossæ; bill relatively shorter and more depressed basally, the exposed culmen much shorter than middle toe without claw. .... **Chamæza** (extralimal).<sup>e</sup>

<sup>a</sup> *Hypocnemis* Cabanis, in Wiegmann's Archiv für Naturg., xiii, pt. i, 1847, 212. Type, *Turdus tintinnabulatus* Gmelin = *Formicarius cantator* Boddaert. (Guiana and upper Amazon Valley; two species.)

<sup>b</sup> Including *Myrmelastes* Sclater, which I am unable to separate generically.

<sup>c</sup> *Myrmoderas* Ridgway, Proc. Biol. Soc. Wash., xxii, April 17, 1909, 70. Type *Myiothera loricata* Lichtenstein.

Besides the type, the following species (placed in *Myrmeciza* by Dr. Sclater) also belong here: *M. cinnamomea* (Gmelin), *M. ruficauda* (Maximilian), *M. squamosa* (Pelzelin), and *M. atrothorax* (Boddaert); probably also *Myrmeciza pelzelni* Sclater and *M. hemimelæna* Sclater, which, however, I have not seen. The group ranges from the Guianas and Amazon Valley to southeastern Brazil.

<sup>d</sup> I am not at all satisfied with these characters, but am unable to find better ones for separating these two exceedingly distinct genera from the rest, collectively. They doubtless possess marked anatomical differences, for they certainly stand clearly apart from all the rest of the family.

<sup>e</sup> *Chamæza* Vigors, Zool. Journ., ii, 1825, 395. Type, *C. meruloides* Vigors = *Turdus brevicaudus* Gmelin. — *Chamæzosa* (emendation) Cabanis, in Wiegmann's Archiv für Naturg., i, 1847, 218. (Colombia to southeastern Brazil; six species.).

- bb. Second phalanx of middle toe partly united to outer toe; acrotarsium fused ("booted"). (*Pithyæ*.)
- c. Tail not longer than combined length of tarsus and middle toe with claw.
- d. Orbital region wholly feathered; outstretched feet reaching much beyond tip of tail; coloration varied.
- e. Conspicuously crested and bearded; nostrils less widely separated (distance between them less than that from either to maxillary tomia); back and wings unicolored. .... *Pithys* (extralimital).<sup>a</sup>
- ee. Neither crested nor bearded; nostrils more widely separated (distance between them greater than that from either to maxillary tomia); wings spotted or barred.
- f. Bill relatively shorter (exposed culmen not more than one-fourth as long as wing) and broader (width at frontal antiæ much greater than its width at same point and equal to at least half the distance from nostril to tip of maxilla); back spotted or barred, or with a concealed patch of white; tail tipped with white or cinnamon. .... *Hylophylax* (p. 126).
- ff. Bill relatively longer (exposed culmen more than one-fourth as long as wing) and more compressed (width at frontal antiæ very little if any greater than depth at same point and equal to less than half the distance from nostril to tip of maxilla); back neither spotted nor barred, nor with concealed white patch; tail unicolored.
- Sclateria** (extralimital).<sup>b</sup>
- dd. Orbital region partly nude; outstretched feet reaching to but little if any beyond tip of tail; coloration plain. .... **Anoplops** (p. 130).
- cc. Tail decidedly longer than combined length of tarsus and middle toe with claw.
- d. Tail about two-thirds as long as wing; loreal and frontal feathers dense; malar region wholly feathered; nostril narrow, longitudinal; culmen less sharply or not at all ridged; under parts unicolored.
- e. Pileum crested; upper eyelid not feathered; culmen more contracted, slightly ridged; back and wing-coverts unicolored.

**Rhegmatorhina** (extralimital).<sup>c</sup>

<sup>a</sup> *Manikup* Desmarest, Hist. Nat. des Tangaras, 1805, text to pl. 66. Type, *Le Manikup de Cayenne* Daubenton=*Pipra albifrons* Gmelin.—*Pithys* Vieillot, Nouv. Dict. d'Hist. Nat., xxiv, 1818, 112 (diagnosis but no type); xxvi, 1818, 520. Type, *P. leucops* Vieillot=*Pipra albifrons* Gmelin.—*Dasyptilops* Cabanis and Heine, Mus. Hein., ii, 1859, 8. Type, *Pipra albifrons* Gmelin. (Colombia to Guiana, Peru, and central Brazil; two or three species.)

Notwithstanding its unquestioned priority, the name *Manikup* is so obviously both barbarous and cacophonous that it should not be employed as the generic term.

<sup>b</sup> *Holocnemis* (not of Schilling, 1829) Strickland, Ann. and Mag. Nat. Hist., xiii, 1844, 415. Type, *H. flammulata* Strickland=*Sitta naxia* Gmelin.—*Heterocnemis* (not of Albers, 1852) Sclater, Proc. Zool. Soc. Lond., 1855, 146 (new name for *Holocnemis* Strickland, preoccupied). Type, *Sitta naxia* Gmelin.—*Sclateria* Oberholser, Proc. Ac. Nat. Sci. Phila., June 2, 1899, 209 (new name for *Heterocnemis* Sclater, preoccupied). The above diagnosis must be taken with reservation as applying to this genus, as, unfortunately, no memorandum was made of the species upon which it was based. No species of *Sclateria* is represented in the U. S. National Museum collection.

<sup>c</sup> *Rhegmatorhina* Ridgway, Proc. U. S. Nat. Mus., x, sig. 33, Aug. 6, 1888, 525, footnote. Type, *R. gymnops* Ridgway. (Lower Amazon Valley; monotypic.)



- ee. Pileum not crested; upper eyelid feathered; culmen broadly rounded; back and wing-coverts conspicuously spotted.

*Phlegopsis* (extralimital).<sup>a</sup>

- dd. Tail nearly as long as wing; loreal and frontal feathering scant; nostrils rounded; culmen more sharply ridged; malar region partly nude; under parts (as well as upper) conspicuously spotted. . . . *Phænostictus* (p. 134).

- aa. Planta tarsi broadly rounded behind, composed of a single row or series of scutella, the inner edge of which is more or less prominent and convolute, separated (at least in part) from the inner edge of the acrotarsium by a narrow groove. (*Grallariinæ*.)

- b. Tarsus shorter than commissure, shorter than middle toe with claw; feathering head very short, more scale-like; bill slender, with mesorhinium very broad and flattened basally. (*Rhopoterpæ*) . . . . . *Rhopotérpe* (p. 138).

- bb. Tarsus much longer than commissure, much longer than middle toe with claw; feathering of head normal; bill stouter, the mesorhinium narrow and compressed (normal) basally.

- c. Exposed culmen more than one-fourth as long as wing; tip of maxilla more strongly uncinatè; rictal bristles obsolete; postocular region nude. (*Pittasomæ*) . . . . . *Pittasoma* (p. 140).

- cc. Exposed culmen less than one-fourth as long as wing; tip of maxilla less strongly uncinatè; rictal bristles obvious (sometimes very distinct); postocular region feathered. (*Grallariæ*.)

- d. Nasal fossæ short and broad (distance from their anterior end to base of exposed culmen equal to not more than half the distance from the former to tip of maxilla), more or less triangular, the nostrils more oblique and in contact with latero-frontal antiæ or separated from the latter by a very slight interval; rictal bristles obvious; bill stouter, triangular in lateral profile, relatively deeper at base; depth at frontal antiæ equal to three-fifths to two-thirds the distance from nostril to tip of maxilla, or else the nostrils partly concealed by latero-frontal feathers.

- e. Tarsus only about one-third as long as wing; middle toe, without claw, three-fifths as long as tarsus; bill much broader basally, its width at frontal antiæ equal to about three-fifths the distance from nostril to tip of maxilla; rictal bristles more than half as long as bill; very small (total length less than 100 mm.) . . . . . *Grallaricula* (p. 143).

- ee. Tarsus much more than one-third (sometimes more than half) as long as wing; middle toe, without claw, less than three-fifths as long as tarsus; bill much narrower basally, its width at frontal antiæ equal to little if any more than half the distance from nostril to tip of maxilla; rictal bristles much less than half as long as bill; larger forms (total length about 120–210 mm.).

- f. Tarsus decidedly less than half as long as wing, less distinctly scutellate, the inner edge of the planta scarcely convolute; upper parts squamated. . . . . *Grallaria* (p. 146).

- ff. Tarsus at least half as long as wing, more distinctly scutellate, the inner edge of the planta distinctly convolute; upper parts not squamated.

- g. Tail at least half as long as wing; rictal bristles distinct.

- h. Bill stouter; tarsus more than half as long as wing; coloration more varied, the pileum and hindneck rufescent in contrast with olive of back, etc., the under parts white striped laterally with brown

<sup>a</sup> *Phlegopsis* Reichenbach, Av. Syst. Nat., 1850, pl. 57. Type, *Myothera nigro-maculata* Lafresnaye and D'Orbigny.—*Phlogopsis* (emendation) Sclater, Proc. Zool Soc. Lond., 1858, 276. (Amazon Valley and Guiana; five species and subspecies.)



- and black or else plain gray, very different from color of upper parts.....*Hypsibemon* (extralimital).<sup>a</sup>
- hh.* Bill more slender; tarsus not more than half as long as wing; coloration plain, the pileum and hindneck concolor with the back, etc. (plain olive or rufescent), the under parts concolored (usually tawny or ochraceous).....*Oropezus* (extralimital).<sup>b</sup>
- gg.* Tail decidedly less than half as long as wing; rictal bristles indistinct.....*Myrmothera* (extralimital).<sup>c</sup>
- dd.* Nasal fossæ longer and narrower (distance from anterior end to base of exposed culmen equal to about two-thirds the distance from same point to tip of maxilla), elliptical or oblong, the nostrils more longitudinal and separated from latero-frontal antiæ by a distinct interval of naked integument; rictal bristles wanting; bill relatively longer and narrower, more terete (depth at frontal antiæ equal to not more than half the distance from nostril to tip of maxilla).....*Hylopezus* (p. 152).

### Genus CYMBILAIMUS Gray.

*Cymbilaimus* GRAY, List Gen. Birds, 1840, 36. (Type, *Lanius lineatus* Leach.)

*Cymbilanius* (emendation) SCLATER, Proc. Zool. Soc., Lond., 1854 (pub. Apr. 5, 1855), 112.

*Cymbolaemus* (emendation) CABANIS and HEINE, Mus. Hein., ii, Aug., 1859, 18, footnote, in text.

Medium-sized Formicariidæ (length about 160 mm.) with short, very stout, and strongly hooked bill, rounded and exposed nostrils, and finely barred plumage.

Bill about as long as head or a little shorter, very stout, strongly hooked, its width at frontal antiæ about equal to its depth at same point and about two-thirds the distance from nostril to tip of maxilla; exposed culmen shorter than tarsus, nearly straight to near the abruptly decurved and strongly uncinuate tip of maxilla; maxillary tomium straight for most of its length, distinctly notched or concave subterminally; mandible falcate, recurved terminally; gonys strongly convex, ascending terminally, broadly rounded (not ridged) beneath, decidedly longer than unfeathered portion of mandibular rami; mandibular tomium distinctly toothed and notched subterminally. Nostril exposed, small, rounded or broadly oval, with an internal tubercle showing within upper posterior portion. Rictal bristles obvious but small; feathers of chin and anterior portion of malar region with bristly points or terminal setæ. Wing rather short,

<sup>a</sup> *Hypsibemon* Cabanis, in Wiegmann's Archiv für Naturg., xiii, pt. i, 1847, 217. Type, *Grallaria ruficapilla* Lafresnaye. (Andes of Colombia, Ecuador, and Peru; several species.)

This genus includes the first three species of Dr. Sclater's "*Grallariæ flammulatæ*," together with at least *Grallaria ruficeps* of his section "*Grallariæ uniformes*."

<sup>b</sup> *Oropezus* Ridgway, Proc. Biol. Soc., Wash., xxii, April 17, 1909, 70. Type, *Grallaria rufula* Lafresnaye. (Mountains of Colombia, Ecuador, and Peru; several species.)

<sup>c</sup> *Myrmothera* Vieillot, Analyse, 1816, 43. Type, "*Béfroï* [= *Formicarius brevicauda* Boddaert] et quelques autres fourmilliers de Buffon." (Guiana and lower Amazon Valley; Venezuela?; two species?)

much rounded, the longest primaries but little longer than secondaries; sixth and seventh or fifth, sixth, and seventh, primaries longest, the tenth (outermost) about three-fifths as long as the longest. Tail about as long as wing, graduated for about one-third its length, the rectrices (12) rather broad and rounded terminally. Tarsus more than one-third as long as wing (about as long as bill from rictus to tip of maxilla), rather slender, distinctly scutellate, the plantar scutella in two parallel, contiguous rows; middle toe, with claw, much shorter than tarsus; outer toe (without claw) reaching to or beyond middle of subterminal phalanx of middle toe, the inner decidedly shorter, reaching (without claw) about to subterminal articulation of middle toe; hallux about as long as inner toe but much stouter; middle toe united to outer toe for whole of its basal phalanx, to inner toe for about half as much; claws moderate, strongly curved, that of hallux decidedly shorter than the digit. Plumage full, blended, moderately lax, that of the rump much developed; pileum with a full decumbent crest of broad, rounded feathers.

*Coloration*.—Adult male black, the upper parts (except pileum) narrowly, the under parts more broadly, barred with white; adult female with pileum chestnut, the rest of plumage barred with chestnut or brown and buffy or pale fulvous.

*Range*.—Nicaragua to Peru and lower Amazon Valley. (Monotypic.)

### CYMBILAIMUS LINEATUS FASCIATUS Ridgway.

#### FASCIATED ANTSHRIKE.

Similar to *C. l. lineatus*<sup>a</sup> but averaging decidedly larger; adult male with black bars on under parts averaging decidedly broader (especially on throat), the adult female and young with under parts much more strongly buffy and (usually, at least,) more heavily barred.

*Adult male*.—Pileum black, the forehead (sometimes crown and occiput also) narrowly barred with white; rest of upper parts black, narrowly and rather distantly barred with white, the outer webs of primaries and distal secondaries with small spots of white in transverse series; sides of head and neck and entire under parts sharply barred with black and white, the bars of the two colors about equal in width; maxilla black, mandible pale grayish or dull yellowish (pale bluish gray, with whitish tip, in life); iris carmine red; legs and feet grayish or horn color (light bluish gray in life); length

<sup>a</sup> *Lanius lineatus* Leach, Zool. Misc., i, 1815, 20, pl. 6 (Guiana).—*Thamnophilus lineatus* Vieillot, Nouv. Dict. d'Hist. Nat., iii, 1816, 316.—*Cymbilaimus lineatus* Gray, List Gen. Birds, 1841, 49.—*Cymbilanius lineatus* Sclater, Proc. Zool. Soc., Lond., 1854, 112; Cat. Birds Brit. Mus., xv, 1890, 178, part.—*Cymbilanius lineatus lineatus* Hellmayr, Novit. Zool., xiv, 1907, 60, 369. (Tropical South America in general, except Pacific Coast district south to Ecuador).

(skins), 154-189 (165); wing, 70-78 (74); tail, 63-73.5 (67.3); culmen, 22-25 (23.4); tarsus, 24-25.5 (24.8); middle toe, 15-16 (15.5).<sup>a</sup>

*Adult female*.—Forehead pale buff to tawny-buff, barred with black; rest of pileum cinnamon-rufous or rufous-chestnut, usually with some of the feathers more or less distinctly barred or margined terminally with black or dusky; rest of upper parts black, or sooty black, broadly and sharply barred with buff or tawny-buff, the bars on rectrices narrower, more or less curved, and more brownish; sides of head and neck and entire under parts pale buff to tawny-buff or nearly clay color,<sup>b</sup> narrowly barred with black or sooty black, the bars usually narrower on chin, throat, and abdomen; bill, iris, legs, and feet as in adult male; length (skins), 149-175 (169); wing, 71-78 (74); tail, 65-72.5 (69.2); culmen, 21-25 (22.6); tarsus, 24-26 (25); middle toe, 14-16 (15.3).<sup>c</sup>

*Immature male*.—Similar to the adult female (perhaps not always distinguishable) but under parts less conspicuously barred, the chin, throat, and abdomen nearly immaculate buff; iris reddish brown.<sup>d</sup>

Nicaragua (Rio Escondido; Los Sábalos), Costa Rica (Angostura; Sipúrio; Jiménez; Rio Frio; Rio Súcio; Bonilla; Guayabo; Carrillo; Cuábre; El Hogár; San Carlos; La Cristina; La Vijagua), and Panamá (Santa Fé de Veragua; Mina de Chorchá; Calovévora; Calobre; Santiago de Veragua; Lion Hill; Panamá; Pintada, Coclé;

<sup>a</sup> Twenty specimens.

<sup>b</sup> Sometimes the color approaches buffy white on sides of head, chin, and throat.

<sup>c</sup> Twenty specimens.

| Locality.                                                         | Wing. | Tail. | Culmen. | Tarsus. | Middle toe. |
|-------------------------------------------------------------------|-------|-------|---------|---------|-------------|
| MALES.                                                            |       |       |         |         |             |
| Three adult males from Nicaragua.....                             | 76.2  | 68.7  | 23.7    | 25      | 15.5        |
| Ten adult males from Costa Rica.....                              | 74.4  | 67.9  | 23.8    | 24.8    | 15.7        |
| Seven adult males from Panamá.....                                | 72.5  | 66    | 23      | 24.7    | 15.3        |
| One adult male from Ecuador.....                                  | 82    | 67    | 24.5    | 24.5    | 15.5        |
| Two adult males ( <i>C. l. lineatus</i> ) from Venezuela.....     | 74    | 68    | 21.5    | 25.2    | 15          |
| One adult male ( <i>C. l. lineatus</i> ) from British Guiana..... | 75    | 71    | 24.5    | 25      | 15.5        |
| Six adult males ( <i>C. l. lineatus</i> ) from Lower Amazon.....  | 73.2  | 72.2  | 22.8    | 25.1    | 15.2        |
| FEMALES.                                                          |       |       |         |         |             |
| Four adult females from Nicaragua.....                            | 74.6  | 69.6  | 23.2    | 25.9    | 15.7        |
| Ten adult females from Costa Rica.....                            | 74.6  | 70    | 22.1    | 24.7    | 15.3        |
| Six adult females from Panamá.....                                | 72.6  | 67.6  | 23.1    | 24.7    | 15          |
| Two adult females ( <i>C. l. lineatus</i> ) from Venezuela.....   | 74.5  | 67.5  | 22.2    | 24      | 15.2        |
| Two adult females ( <i>C. l. lineatus</i> ) from Cayenne.....     | 74    | 71.2  | 22.7    | 24.2    | 15.5        |
| One adult female ( <i>C. l. lineatus</i> ) from Lower Amazon..... | 75.5  | 71.5  | 23.5    | 27      | 15.5        |

The specimen from Ecuador agrees much better in coloration with examples from Panamá than with true *C. lineatus*.

<sup>a</sup> Heyde, manuscript.



Cascajál, Coclé), and southward through Colombia and Ecuador to northern Peru.

*Cymbilanius lineatus* (not *Lanius lineatus* Leach) LAWRENCE, Ann. Lyc. N. Y., vii, 1862, 293 (Lion Hill, Panamá); ix, 1868, 107 (Angostura, Costa Rica).—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1864, 355 (Lion Hill; crit.).—SALVIN, Proc. Zool. Soc. Lond., 1867, 144 (Santiago and Santa Fé de Verágua, Panamá); 1870, 194 (Mina de Chorchá, Calovevora, and Calobre, Panamá).—FRANTZIUS, Journ. für Orn., 1869, 305 (Costa Rica).—SALVIN and GODMAN, Biol. Centr. Am., Aves, ii, 1892, 194, part (excl. South Am. localities and references).

(?) *Cymbilanius lineatus* SCLATER, Proc. Zool. Soc. Lond., 1854, 112 (Quijos, Ecuador); 1858, 65 (e. Ecuador), 206, part (monogr.).—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1866, 566 (Rio Ucayali, e. Peru); 1873, 272 (Nauta and Pebas, e. Peru); 1879, 524 (Remédios and Nechi, Antioquia, Colombia).—TACZANOWSKI, Proc. Zool. Soc. Lond., 1874, 529 (Monterico, centr. Peru); Orn. du Pérou, ii 1884, 1.—ALLEN, Bull. Am. Mus., ii, 1889, 74 (Rio Napo, e. Ecuador).—HARTERT, Novit. Zool., v, 1898, 492 (Cachavi, n. w. Ecuador).—SALVADORI and FESTA, Boll. Mus. Zool., etc., Torino, xv, no. 362, 1899, 27 (Valle del Rio Santiago, e. Ecuador).—BERLEPSCH and STOLZMANN, Proc. Zool. Soc. Lond., 1902, 59 (Monterico, Peru).

[*Cymbilanius*] *lineatus* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 69, part.—SHARPE, Hand-list, iii, 1901, 9, part.

*Cymbilanius lineatus fasciatus* RIDGWAY, Proc. U. S. Nat. Mus., vi, no. 26, April 11, 1884, 404 (Los Sábalos, Nicaragua; coll. U. S. Nat. Mus.), 415 (Rio Súcio, Costa Rica).—ZELEDÓN, An. Mus. Nac. Costa Rica, 1887, 114 (Jiménez, Costa Rica; Panamá).—RICHMOND, Proc. U. S. Nat. Mus., xvi, 1893, 498, 499 (Rio Escondido, Nicaragua; crit.).—BANGS, Proc. New Engl. Zool. Club, ii, 1900, 24 (Loma del León, Panamá).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 600 (Caribbean lowlands and foothills Costa Rica; habits).—FERRY, Pub. 146, Field Mus. N. H., orn. ser., i, no. 6, 1910, 271 (Guayabo, Costa Rica).

*Cymbilanius lineatus (fasciatus)* RIDGWAY, Proc. U. S. Nat. Mus., vi, 1883, 415 (Rio Súcio, Costa Rica).

(?) *Thamnophilus nigricristatus* (not of Lawrence) BOUCARD, Proc. Zool. Soc. Lond., 1878, 60 (San Carlos, Costa Rica).

### Genus THAMNISTES Sclater and Salvin.

*Thamnistes* SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1860, 299. (Type, *T. anabatinus* Sclater and Salvin.)

Medium-sized or rather small Formicariidæ (length about 130 mm.) with rather large, stout, and strongly hooked bill, small, circular nostrils and coloration plain brown above with wings and tail more rufescent (adult male with a concealed dorsal patch of ochraceous or tawny), the under parts plain olive-buffy or yellowish.

Bill a little shorter than head, rather stout, strongly hooked, its width at frontal antiæ greater than its depth at same point and equal to about half the distance from nostril to tip of maxilla; culmen very slightly curved from base to near tip, where strongly decurved, the tip of maxilla conspicuously uncinatè; maxillary tomium nearly straight, deeply notched subterminally; mandible subfalcate (slightly recurved terminally), the tomium nearly straight, distinctly toothed



and notched subterminally; gonys distinctly convex, ascending terminally, more strongly convex and rather prominent basally. Nostril exposed, very small, circular, with an oblique tubercle in posterior half. Rictal bristles obvious but small; feathers of chin, lores, and anterior portion of malar region with distinct bristly points. Wing moderate, rather pointed, the primaries decidedly longer than secondaries; sixth and seventh, or sixth, seventh and eighth, primaries longest, the tenth (outermost) shorter, the ninth longer, than secondaries. Tail decidedly shorter than wing to end of secondaries, strongly rounded (graduation about equal to half the length of exposed culmen), the rectrices (12) rather narrow, rounded terminally. Tarsus longer than exposed culmen, less than one-third as long as wing; acrotarsium distinctly scutellate; outer side of planta indistinctly scutellate or with scutella obsolete, the inner side with a single series of rather small roundish or oval scutella; middle toe, with claw, much shorter than tarsus; outer toe, without claw, reaching to beyond middle of subterminal phalanx of middle toe, the inner toe slightly shorter; hallux about as long as inner toe but much stouter; basal phalanx of middle toe wholly united to outer toe, for about half its length to inner toe; claws strongly curved, broad, compressed, that of hallux much shorter than the digit.

*Coloration*.—Above plain brown, the wings (sometimes pileum also) more rufescent, the tail chestnut or deep cinnamon-rufous; under parts plain olive-buff or yellowish, more grayish olive on flanks; adult males with a concealed dorsal patch of ochraceous or tawny.

*Range*.—Southern Mexico to Peru. (Monotypic?)<sup>a</sup>

**THAMNISTES ANABATINUS ANABATINUS** Sclater and Salvin.

**TAWNY ANTSHRIKE.**

*Adult male*.—Above plain tawny brown (nearest raw umber or tawny olive), paler on forehead; upper tail-coverts and tail deep cinnamon-rufous or rufous-chestnut; wings (including secondaries) dull cinnamon-rufous or russet; interscapulars light cinnamon-rufous or deep ochraceous-buff beneath surface (forming a large and conspicuous patch when feathers are spread) followed immediately by a subterminal bar or spot of black; an indistinct superciliary stripe and suborbital area of pale grayish buffy, the two separated posteriorly by a postocular streak of brown; auricular region and sides of neck similar in color to back, but paler, the color deepening somewhat on malar region; general color of under parts pale brownish yellowish anteriorly, more grayish (tending more or less toward

<sup>a</sup> Although three species are recognized by authorities, it is likely that these may be in reality forms of one species. Two of these, however (*T. aequatorialis* Sclater and *T. rufescens* Cabanis), I have not seen.

olive-buff) posteriorly, the sides and flanks darker and more grayish (approaching light hair brown); under wing-coverts and broad edgings to inner webs of remiges ochraceous-buff; maxilla dusky, with paler tomia; mandible pale yellowish grayish (in dried skins); feet dusky (bluish gray in life?); length (skins), 136.5–142 (139); wing, 65–67 (66); tail, 53.5–62.5 (58); column, 18.5–19.5 (19); tarsus, 21–21.5 (21.2); middle toe, 12–12.5 (12.2).<sup>a</sup>

*Adult female*.—Similar to the adult male but without the concealed dorsal patch of cinnamon-rufous or ochraceous-buff, the underlying portion of the interscapulars being pale gray with whitish shaft-streaks; length (skins), 129.5–145 (138); wing, 66–67 (66.5); tail, 54–56 (55.2); culmen, 18–20 (19.2); tarsus, 19.5–20.5 (19.9); middle toe, 12–12.5 (12.1).<sup>b</sup>

Southeastern Mexico, in State of Tabasco (Teapa); Guatemala (Choctúm; Cajabón; Samayoa; Telemán); British Honduras (Toledo District).

*Thamnistes anabatinus* SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1860, 299 (Choctúm, Vera Paz, Guatemala; coll. P. L. Sclater).—SALVIN and SCLATER, Ibis, 1860, 399 (Choctúm).—SCLATER, Cat. Am. Birds, 1862, 176 (Choctum and Cajabón, Guatemala); Cat. Birds Brit. Mus., xv, 1890, 216, part (Choctum, Cajabón, and Samayoa, Guatemala).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 205, part, pl. 50, fig. 1 (Telemán, etc., Guatemala).

[*Thamnistes*] *anabatinus* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 70, part.—SHARPE, Hand-list, iii, 1901, 17, part.

*Thamnistes anabatinus anabatinus* RIDGWAY, Proc. Biol. Soc. Wash., xxi, Oct. 20, 1908, 193, in text.

### THAMNISTES ANABATINUS SATURATUS Ridgway.

#### RUSSET ANTSHRIKE.

Similar to *T. a. anabatinus* but coloration much darker and less ochraceous (more olivaceous) above, the pileum more or less distinctly rufescent (sometimes deep russet or mars brown); wings much less rufescent, especially the secondaries; size averaging smaller.

<sup>a</sup> Two specimens.

<sup>b</sup> Four specimens.

| Locality.                                                    | Wing. | Tail. | Culmen. | Tarsus. | Middle toe. |
|--------------------------------------------------------------|-------|-------|---------|---------|-------------|
| MALES.                                                       |       |       |         |         |             |
| One adult male from Guatemala.....                           | 67    | 62.5  | 18.5    | 21.5    | 12          |
| One adult male from Tabasco (Teapa).....                     | 65    | 53.5  | 19.5    | 21      | 12.5        |
| FEMALES.                                                     |       |       |         |         |             |
| Two adult females from British Honduras (Toledo District)... | 66    | 55    | 19      | 19.7    | 12.2        |
| One adult female from Guatemala.....                         | 67    | 55    | 18      | 19.5    | 12          |
| One adult female from Tabasco (Teapa).....                   | 66    | 56    | 20      | 20.5    | 12          |

*Adult male*.—Length (skins), 126–135.5 (130.4); wing, 65–69.5 (67.7); tail, 48–52 (49.7); culmen, 18–19.5 (18.7); tarsus, 19–20.5 (19.6); middle toe, 11–13 (11.8).<sup>a</sup>

*Adult female*.—Length 121–148 (131); wing, 61.5–69 (65.9); tail, 45.5–53.5 (50.7); culmen, 17.5–20.5 (20.1); tarsus, 19.5–20.5 (20.1); middle toe, 11–12.5 (11.7).<sup>a</sup>

Costa Rica (Angostura; Tucurríqui; Jiménez; Volcan de Turrialba; Carrillo; La Hondura; Pacuare; Naranjo de Cartago; Guápiles; El Hogár; Bonilla; La Balsa; Tuis; La Vijagua; Cariblanco de Sarapiquí; El Pozo de Térraba; Pozo del Pitál) and western Panamá (Calobre; Calovévora; Bugaba; Volcan de Chiriquí, 2,000–3,000 feet).

*Thamnistes anabatinus* (not of Sclater and Salvin) LAWRENCE, Ann. Lyc. N. Y., ix, 1868, 107 (Angostura and Tucurríqui, Costa Rica).—FRANTZIUS, Journ. für Orn., 1869, 305 (Costa Rica).—SALVIN, Proc. Zool. Soc. Lond., 1870, 194 (Calovévora and Bugaba, Panamá; crit.).—ZELEDÓN, Anal. Mus. Nac. Costa Rica, i, 1887, 114 (Angostura, Pacuare, and Naranjo, Costa Rica).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 205, part (Costa Rican and Panaman localities and references).—CHERRIE, Anal. Inst. Fis.-Geog. Costa Rica, vi, 1893, 19 (Pozo del Pitál, Costa Rica).—BANGS, Proc. New Engl. Zool. Club, iii, 1902, 41 (Volcan de Chiriquí, Panamá, 2,000–3,000 ft.).

[*Thamnistes*] *anabatinus* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 70, part.—SHARPE, Hand-list, iii, 1901, 17, part.

*Thamnistes anabatinus saturatus* RIDGWAY, Proc. Biol. Soc. Wash., xxi, Oct. 20, 1908, 193 (Bonilla, Costa Rica, 2,600 ft.; coll. U. S. Nat. Mus.).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 605 (Costa Rican range; crit.; habits).

#### Genus ABALIUS Cabanis.

*Abalius* <sup>b</sup> CABANIS, Journ. für Orn., ix, July, 1861, 242. (Type, *Thamnophilus punctatus* Cabanis = *T. bridgesi* Sclater.)

Medium-sized Formicariidae (length about 155 mm.) with tail nearly as long as wing, pileum not crested, the adult male black (under parts of body more gray or slate colored) with small white tips to wing-coverts and lateral rectrices, adult females slate color or olive streaked with whitish.

Bill about as long as head rather stout, moderately compressed, distinctly hooked; exposed culmen about as long as tarsus, distinctly ridged, gently curved from near base to beyond middle, where more

<sup>a</sup> Ten specimens, all from Costa Rica. Costa Rican specimens compare in measurements with those from Panamá (Chiriquí, Caribbean slope) as follows:

| Locality.                                                   | Wing. | Tail. | Culmen. | Tarsus. | Middle toe. |
|-------------------------------------------------------------|-------|-------|---------|---------|-------------|
| MALES.                                                      |       |       |         |         |             |
| Ten adult males from Costa Rica.....                        | 67.7  | 49.7  | 13.7    | 19.6    | 11.8        |
| Two adult males from Panamá (Chiriquí, Caribbean slope).... | 66    | 51.2  | 13      | 20      | 12          |

<sup>b</sup> "Von  $\alpha$ , privativum und  $\beta\alpha\lambda\acute{o}\varsigma$ , scheckig, bunt." (Cabanis.)



strongly decurved, the tip of maxilla conspicuously uncinatè; maxillary tomium nearly straight, distinctly notched subterminally; tip of mandible slightly recurved or subfalcate, the tomium slightly but distinctly toothed and notched subterminally; gonys strongly convex and prominent basally, ascending and moderately convex terminally, nearly twice as long as unfeathered portion of rami. Nostril small, exposed, obliquely oval, without visible internal tubercle. Rictal bristles obvious but small; feathers of chin and anterior portion of malar region with small bristly tips, those of loreal region with much-thickened shafts, and those of frontal antiaë semi-decomposed. Wing moderate, the longest primaries decidedly longer than secondaries, much rounded; fifth, sixth, and seventh primaries longest, the tenth (outermost) about three-fifths as long as the longest, the ninth about as long as secondaries. Tail slightly but decidedly shorter than wing, much rounded (graduation about equal to distance from nostril to tip of maxilla), the rectrices (12) broad, rounded terminally. Tarsus as long as exposed culmen or a little shorter (between one-fourth and one-third as long as wing), distinctly scutellate, the planta consisting of two longitudinal series of scutella, the inner series of which are larger, of quadrate form, and extend around the posterior margin, the outer series much smaller, longitudinal, and irregularly hexagonal or elliptical; middle toe, with claw, much shorter than tarsus; outer toe, without claw, reaching to beyond middle of subterminal phalanx of middle toe, the inner toe decidedly but slightly shorter; hallux about as long as inner toe but much stouter; middle toe united to outer toe by whole of its basal phalanx, to inner toe by more than half its basal phalanx; claws moderately curved, rather blunt, much compressed. Plumage blended, rather lax, especially on rump; feathers of pileum moderately developed, not forming a distinct crest.

*Coloration*.—Adult male black (more gray or slaty on under parts of body), the wing-coverts with white terminal dots, the lateral rectrices narrowly tipped with white; adult female gray or olive, narrowly streaked with whitish.

*Range*.—Costa Rica and western Panamá. (Monotypic.)

#### ABALIUS BRIDGESI (Sclater.)

##### BRIDGES' ANTSHRIKE.

*Adult male*.—Head, neck, chest, and upper parts black, broken on wing-coverts by a small spot of white at tip of most of these feathers; outer pair of rectrices with a small terminal spot of white, the next pair sometimes with a similar but smaller spot;<sup>a</sup> under parts of body, posterior to chest, plain slate color, the under tail-coverts similar but darker; under wing-coverts (except along margin of wing)

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<sup>a</sup> Very rarely there are a few very narrow streaks of white on the chest.



yellowish white, usually flecked, more or less, with dusky; inner webs of remiges broadly edged (except terminally) with yellowish white; bill black; iris brown; legs and feet dusky (plumbeous in life); length (skins), 150–167 (157); wing, 72–80 (74.9); tail, 62–71 (67.5); culmen, 20–22.5 (21.4); tarsus, 21–23.5 (22.4); middle toe, 13.5–14.5 (13.9).<sup>a</sup>

*Adult female*.—Head and neck black narrowly streaked with white, the streaks much broader (sometimes spot-like) on chin and throat; back, scapulars, rump, and upper tail-coverts plain sepia-brown to slaty brown, the feathers of back slightly darker centrally; wings and tail darker (the tail brownish black or blackish brown), all, or nearly all, the wing-coverts marked with a small roundish or triangular terminal spot of white; under parts, posterior to throat or upper chest, varying from nearly slate-gray to olive-drab, the pectoral region streaked with white; under tail-coverts deeper brown, narrowly streaked (sometimes also somewhat spotted) with white; under wing-coverts and broad edgings to inner webs of remiges yellowish white or pale creamy yellow; maxilla black, mandible paler (plumbeous in life); iris dark brown or brownish gray; legs and feet plumbeous; length (skins), 148–166 (157); wing, 70–77 (72.9); tail, 60–70.5 (66.7); culmen, 19.5–22 (20.7); tarsus, 21–23.5 (22.4); middle toe, 13–15 (14).<sup>b</sup>

*Young male (first plumage)*.—Similar to the adult male but texture of plumage much softer, black of back, etc., duller, and chest with narrow shaft-streaks of white.

*Young female (first plumage)*.—Similar to adult female but duller in color, with black of head and neck replaced by dark sooty brown above and paler sooty brown below, and streaks much less distinct, those on pileum pale brownish or tinged with brown, instead of pure white, those of pectoral area broader but much less distinct and also suffused with pale brownish.

Southwestern Costa Rica (Pozo Azúl de Pirís; Pozo del Pitál, Rio Naranjo; El Pozo de Térraba; Trojas de Rio Grande; El

<sup>a</sup> Nineteen specimens.

<sup>b</sup> Eighteen specimens.

| Locality.                                    | Wing. | Tail. | Culmen. | Tarsus. | Middle toe. |
|----------------------------------------------|-------|-------|---------|---------|-------------|
| MALES.                                       |       |       |         |         |             |
| Ten adult males from Costa Rica.....         | 75.8  | 68.6  | 21.3    | 22.1    | 13.9        |
| Nine adult males from western Panamá.....    | 74    | 66.3  | 21.6    | 22.7    | 13.9        |
| FEMALES.                                     |       |       |         |         |             |
| Ten adult females from Costa Rica.....       | 73.4  | 67.8  | 20.6    | 22.5    | 14.1        |
| Eight adult females from western Panamá..... | 72.3  | 65.3  | 20.8    | 22.2    | 13.9        |

Naranjo; Buenos Aires; El General; Tenório; Paso Real, Boruca, Pozo del Rio Grande, and Lagarto, Boruca; Pigres; San Mateo; Esparta) and western Panamá (Divala and David, Chiriquí; Veragua).

*Thamnophilus bridgesi* SCLATER, Proc. Zool. Soc. Lond., 1856, 141 (David, Chiriquí, Panamá; coll. P. L. Sclater; = ♀); 1858, 212 (monogr.); Cat. Birds Brit.-Mus., xv, 1890, 194 (Bugaba and Mina de Chorchá, Panamá).—SALVIN, Proc. Zool. Soc. Lond., 1867, 144 (David, Panamá); 1870, 194 (Bugaba and Mina de Chorchá).—LAWRENCE, Ann. Lyc. N. Y., ix, 1868, 107 (San Mateo, Costa Rica).—FRANTZIUS, Journ. für Orn., 1869, 305 (Costa Rica).—ZELEDÓN, Anal. Mus. Nac. Costa Rica, 1887, 114 (Las Trojas and Pozo Azul de Pirris, Costa Rica).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 199, pl. 49, fig. 2.—CHERRIE, Auk, x, 1893, 279, 280 (Pacific side Costa Rica, up to 2,200 ft.; crit.; habits); Anal. Inst. Fis.-Geog. Costa Rica, vi, 1893, 17 (Pozo del Pitil, Costa Rica; syn.; crit.); Expl. Zool. Merid. Costa Rica, 1893, 41 (Palmár, Boruca, Térraba, Lagarto, and Buenos Aires, s. w. Costa Rica).—BANGS, Auk, xxiv, 1907, 296 (Boruca, Paso Real, Pozo del Rio Grande, and Lagarto, s. w. Costa Rica).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 601 (Pacific lowlands and foothills, Costa Rica; habits).

[*Thamnophilus bridgesi* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 70.—SHARPE, Hand-list, iii, 1901, 12.

*Thamnophilus punctatus* (not *Lanius punctatus* Shaw, 1809 <sup>a</sup>) CABANIS, Journ. für Orn., July, 1861, 241 (Costa Rica; coll. Berlin Mus.; = ♂).—LAWRENCE, Ann. Lyc. N. Y., ix, 1868, 107 (Costa Rica).—FRANTZIUS, Journ. für Orn., 1869, 305 (Costa Rica).—SALVIN, Ibis, 1870, 110 (Costa Rica; crit); Proc. Zool. Soc. Lond., 1870, 194 (Mina de Chorchá, Bugaba, and Volcan de Chiriquí, Panamá).—ZELEDÓN, Anal. Mus. Nac. Costa Rica, 1887, 114 (Las Trojas and Pozo Azul de Pirris, Costa Rica).—SCLATER, Cat. Birds Brit. Mus., xv, 1890, 191 (Costa Rica; Bugaba and Mina de Chorchá, Panamá).—SALVIN and GODMAN, Biol. Centr. Am., Aves, ii, 1892, 198, pl. 49, fig. 1.

[*Thamnophilus punctatus* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 70.—SHARPE, Hand-list, iii, 1901, 12.

(?) *Thamnophilus nigricristatus* (not of Lawrence) BOUCARD, Proc. Zool. Soc. Lond., 1878, 60 (San Carlos, Costa Rica; cites "*Th. punctatus* Cab.")<sup>b</sup>

#### Genus TARABA Lesson.

*Taraba* LESSON, Traité d'Orn., 1831, 375. (Type, *Thamnophilus major* Vieillot.)

*Tabara* (error) SCLATER, Cat. Am. Birds, 1862, 172.

*Diallactes* REICHENBACH, Av. Syst. Nat., 1850, pl. 71. (Type, *Thamnophilus major* Vieillot.)

Large Formicariidæ (length about 200 mm.) with very stout but much compressed, strongly hooked bill, crested pileum, and white under parts, the adult males black above with white markings on wings, adult females chestnut or tawny brown above.

Bill nearly as long as head, very strong but compressed, strongly hooked; culmen nearly straight for most of its length, rather abruptly decurved terminally, the tip of maxilla strongly uncinat; maxillary

<sup>a</sup> Usually placed in *Thamnophilus*, but in this work designated as *Erionotus punctatus* (p. 49).

<sup>b</sup> Salvin and Godman, however (Biol. Centr.-Am., Aves, ii, 1892, 195), place this reference under *Cymbilanius lineatus*.

tomium nearly straight, conspicuously notched subterminally; gonys moderately convex, strongly ascending terminally, prominent basally; mandibular tomium straight or slightly concave toward tip, slightly notched subterminally; width of bill at frontal antiæ about three-fourths its depth at same point. Nostril exposed, broadly longitudinally oval, with distinct internal tubercle. Rictal bristles obvious but small, the loreal feathers with thickened bristly shafts. Wing moderate or rather short, excessively rounded, with longest primaries very little if any longer than secondaries; second, third, and fourth, or third, fourth, and fifth primaries longest and equal, tenth (outermost) about three-fifths as long as longest, the ninth very much, eighth slightly, shorter than secondaries. Tail three-fourths to more than five-sixths as long as wing, much rounded (graduation about equal to distance from nostril to tip of maxilla), the rectrices (12) rather broad, rounded terminally. Tarsus more than one-third as long as wing, distinctly scutellate, the elongate-quadrate plantar scutella in two longitudinal series; middle toe, with claw, decidedly shorter than tarsus; outer toe, without claw, reaching to or slightly beyond middle of subterminal phalanx of middle toe, the inner toe slightly but decidedly shorter; hallux about as long as inner toe but much stouter; basal phalanx of middle toe united for most of its length to outer toe, for about half its length to inner toe; claws moderately developed, that of the hallux decidedly shorter than the digit. Plumage blended, very full, that of rump much developed and lax; pileum with a conspicuous decumbent crest of distinctly outlined, rather narrow feathers.

*Coloration*.—Under parts (except, sometimes, thighs and under tail-coverts), including malar region, immaculate white; upper parts black in adult males, rufous-brown or chestnut in adult females, the wing-coverts tipped with white (primaries sometimes edged with white), the tail sometimes transversely spotted with white.<sup>a</sup>

*Range*.—Southern Mexico to Argentina. (About four species and subspecies.)

#### TARABA TRANSANDEANA TRANSANDEANA (Sclater).

##### HOLLAND'S ANTSHRIKE.

*Adult male*.—Entire upper parts, including sides of head (down to upper margin of malar region) and sides of neck, black, relieved by conspicuous white tips to all the wing-coverts<sup>b</sup> and white edges to alula, the terminal portion of remiges duller blackish or more

<sup>a</sup> *Thamnophilus rohdei* Berlepsch, of Paraguay, referred to this group by Dr. Sclater, has the under parts black in the adult male with the breast varied with white. This species I have not seen and therefore do not know whether it is really a member of this genus or not.

<sup>b</sup> Sometimes a few of the primaries are narrowly edged with white.



slaty; interscapulars with concealed basal portion extensively white; under parts, including malar region, plain white (sometimes tinged with buffy), passing into grayish on flanks; tibial feathers black basally, extensively white terminally (the posterior side of thighs sometimes uniform black); under tail-coverts black, often (irrespective of locality) tipped or barred with white, rarely mostly white; bill black; iris carmine red; legs and feet dusky (bluish gray in life?); length (skins), 179-205 (194); wing, 87-99 (92.1); tail, 64-79 (71); culmen, 26-31.5 (28.5); tarsus, 33-37 (34.2); middle toe, 20-23.5 (21.3).<sup>a</sup>

*Adult female*.—Above plain chestnut, darker on pileum, paler and duller on rump, the tail and primaries more brownish chestnut; loreal and orbital regions dusky, passing into chestnut on auricular region; under parts (including greater part of malar region) plain white (sometimes tinged more or less with buffy), passing through pale buffy grayish into pale buffy brown or cinnamon on flanks; under tail-coverts light chestnut; thighs mixed light chestnut and buffy whitish; bill varying from horn brown to nearly black; iris carmine red; legs and feet horn color or dusky (bluish gray in life?); length (skins), 169-220 (190); wing, 83-96 (89.4); tail, 64.5-75.5 (70.2); culmen, 25-30.5 (28.1); tarsus, 32-36.5 (34.2); middle toe, 20-23.5 (21.8).<sup>b</sup>

*Immature male*.—Similar to the adult male but wing-coverts without white tips (the greater coverts sometimes narrowly tipped with

<sup>a</sup> Forty-seven specimens.<sup>b</sup> Thirty-six specimens.

| Locality.                                                  | Wing. | Tail. | Culmen. | Tarsus. | Middle toe. |
|------------------------------------------------------------|-------|-------|---------|---------|-------------|
| MALES.                                                     |       |       |         |         |             |
| Three adult males from Colombia (Rio Barratoro).....       | 92.5  | 73.3  | 27.8    | 34.7    | 21          |
| Ten adult males from Panamá.....                           | 89.6  | 69.9  | 28.1    | 35      | 22          |
| Ten adult males from Costa Rica.....                       | 93.7  | 71.6  | 29.2    | 35.7    | 22.9        |
| Six adult males from Nicaragua.....                        | 92.5  | 70.9  | 29.2    | 34.7    | 21.8        |
| Seven adult males from Honduras.....                       | 92.5  | 70.7  | 27.8    | 34.3    | 21.1        |
| Six adult males from Guatemala.....                        | 91.2  | 70.5  | 28      | 34.7    | 21.2        |
| Five adult males from southern Mexico.....                 | 93.7  | 72.8  | 29      | 35      | 21.3        |
| FEMALES.                                                   |       |       |         |         |             |
| One adult female from Colombia (Rio Lima).....             | 88    | 68    | 25      | 33      | 21.5        |
| Two adult females from eastern Panamá (Loma del León)..... | 87.2  | 66.2  | 26.2    | 34.5    | 21.7        |
| Eight adult females from western Panamá (Chiriquí).....    | 87.3  | 68.9  | 26.3    | 34.4    | 21.2        |
| Ten adult females from Costa Rica.....                     | 91.6  | 70.7  | 29      | 34.6    | 22.5        |
| Six adult females from Nicaragua.....                      | 91    | 71.4  | 29.2    | 34.3    | 21.7        |
| Two adult females from Honduras.....                       | 86.5  | 67.2  | 28.5    | 33.2    | 21.2        |
| Four adult females from Guatemala.....                     | 87.9  | 72    | 28.4    | 34.6    | 22          |
| Three adult females from southern Mexico.....              | 91.2  | 73    | 29.3    | 34.7    | 21.5        |



rusty brown or buffy), white at base of interscapulars more restricted, and feathers of chest (at least lateral portions) narrowly margined terminally with black.

*Young male (nestling).*—Above wholly dull black, with very indistinct narrow vermiculations of rusty brown on tips of some of the feathers; throat and chest dull grayish, broken by broad bars of black (most distinct on chest) and more narrowly barred with light buffy brown; sides, flanks, and under tail-coverts nearly uniform dull black, but showing very indistinct vermiculations of light brown, especially the under tail-coverts; breast and abdomen mostly white, or grayish white, broken by broad subterminal bars of black, the tip of each feather, narrowly, pale buffy brownish.<sup>a</sup>

Southern Mexico, in States of Vera Cruz (Orizaba; Santecomapám; Playa Vicente; Omealca; Buena Vista; San Andrés Tuxtla) and Tabasco (Teapa), and southward through Guatemala (Choctúm; Chiséc; Cobán; sources of Rio de la Pasión), Honduras (Omoa; San Pedro; San Pedro Sula; Céiba; Julian), Nicaragua (Greytown; Los Sábalo; Rio Escondido; San Emili), Costa Rica (Tucurríqui; Jiménez; Las Trojas; Pacuare; Pozo Azul de Pirris; El Pozo de Terraba; Pozo del Rio Grande; Boruca; Paso Real; Bolsón; El Hogar; Rio Sicsola; Guácimo; Barranca de Puntarenas; Lagarto; El General; Sipúrio), Panamá (David; Mina de Chorchá; Divala; Agua Dulce; Lion Hill; Panamá; Sabana de Panamá), and northwestern Colombia (Rio Lima; Rio Barratoro; Turbo) to Ecuador (Guayaquil; Babahoyo; Santa Rita; Sarayacu; Chimbo; Vices; Foreste del Rio Peripa).<sup>b</sup>

The very large series of Mexican and Central American birds examined in this connection shows very clearly the absence of anything like correlation between geographic distribution and the coloration of the under tail-coverts, and, therefore, in the absence of other characters (that I can discern) I am forced to recognize a single form only.

*Thamnophilus transandeanus* SCLATER, Proc. Zool. Soc. Lond., xxxiii, April 11, 1855, 18 (Guayaquil, w. Ecuador; coll. Brit. Mus.); 1858, 210 (monogr.); 1860, 278 (Babahoyo, w. Ecuador), 294 (Esmeraldas, w. Ecuador); Edinb. Philos. Journ., new ser., i, 1855, 233; Cat. Am. Birds, 1862, 172 (Babahoyo, w. Ecuador); Cat. Birds Brit. Mus., xv, 1890, 185 (Tucurríqui, Costa Rica; Mina de Chorchá, Veragua; Panamá; Babahoyo, Santa Rita, Guayaquil, and Sarayacu, Ecuador; Remedios, prov. Antioquia, Colombia).—CASSIN, Proc. Ac. Nat. Sci. Philad., 1860, 188 (Turbo, Colombia).—LAWRENCE, Ann. Lyc. N. Y., vii, 1862, 293 (Lion Hill, Panamá).—SCLATER and SALVIN, Proc.

<sup>a</sup> Described from no. 28866, Carnegie Museum; Boruca, Costa Rica, Aug. 7, 1907; M. A. Carriker, jr. (Sex given as female, but almost certainly an error.)

<sup>b</sup> I have not seen a specimen from Ecuador, and therefore can not be sure that they are quite identical with those from Central America. Neither have I examined specimens from the vicinity of Bogotá or the State of Antioquia, Colombia, which have been separated by Menegaux and Hellmayr as *Thamnophilus transandeanus granadensis*.

- Zool. Soc. Lond., 1864, 355 (Lion Hill; crit.); 1879, 524 (Remédios and Nechi, Antioquia, Colombia).—SALVIN, Proc. Zool. Soc. Lond., 1867, 144 (David, Panamá; crit.).—TACZANOWSKI, Proc. Zool. Soc. Lond., 1877, 324 (Peru); Orn. du Pérou, ii, 1884, 3.—BERLEPSCH and TACZANOWSKI, Proc. Zool. Soc. Lond., 1883, 564 (Chimbo, w. Ecuador).—ZELEDÓN, Anal. Mus. Nac. Costa Rica, 1887, 114 (Jiménez, Las Trojas, and Pacuare, Costa Rica).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 198 (Tucurrique, Jiménez, Las Trojas, and Pacuare, Costa Rica; David, Mina de Chorchá, and Lion Hill, Panamá; Turbo, Colombia; Ecuador).—CHERRIE, Expl. Zool. Merid. Costa Rica, 1893, 41 (Palmár, Boruca, and Buenos Aires, s. w. Costa Rica).—HARTERT, Novit. Zool., v, 1898, 491 (Chimbo, n. w. Ecuador).—SALVADORI and FESTA, Boll. Mus. Zool., etc., Torino, xv, no. 362, 1899, 27 (Vinces and Foreste del Rio Peripa, w. Ecuador).—BANGS, Proc. New Engl. Zool. Club, ii, 1900, 24 (Loma del León, Panamá); Auk, xxiv, 1907, 296 (Boruca, Pozo del Rio Grande, Lagarto, and Barranca de Puntarenas, Costa Rica).—THAYER and BANGS, Bull. Mus. Comp. Zool., xlv, 1906, 216 (Sabana de Panamá).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 601 (Costa Rica; habits).
- D[iallactes] transandeanus* CABANIS and HEINE, Mus. Hein., ii, Aug., 1859, 18, footnote.
- [*Thamnophilus*] *transandeanus* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 69.—SHARPE, Hand-list, iii, 1901, 10.
- Thamnophilus melanurus* (not of Gould) SCLATER, Proc. Zool. Soc. Lond., 1856, 142 (David, Panama); 1857, 203 (Santecomapám, Vera Cruz); 1859, 57 (Omoa, Honduras), 383 (Playa Vicente, Vera Cruz).—SCLATER and SALVIN, Ibis, 1859, 119 (Omoa, Honduras; crit.).
- Thamnophilus melanurus*? MOORE, Proc. Zool. Soc. Lond., 1859, 57 (Omoa, Honduras; crit.).—SCLATER, Proc. Zool. Soc. Lond., 1859, 383 (Playa Vicente, Vera Cruz).
- (?) [*Diallactes*] *melanurus* HEINE and REICHENOW, Nom. Mus. Hein. Orn., 1890, 128 (Colombia).
- Thamnophilus melanocrissus* SCLATER, Proc. Zool. Soc. Lond., 1860, 252 (Santecomapám, Orizaba, Vera Cruz, Mexico; coll. P. L. Sclater).—Cat. Am. Birds, 1862, 172 (Choctúm, Guatemala); Cat. Birds Brit. Mus., xv, 1890, 184 (Sources Rio de la Pasión and Choctúm, Guatemala; Panamá?).—SALVIN, Ibis, 1866, 203 (Guatemala).—LAWRENCE, Ann. Lyc. N. Y., ix, 1868, 107 (Costa Rica).—FRANTZIUS, Journ. für Orn., 1869, 305 (Costa Rica).—SUMICHRIST, Mem. Bost. Soc. N. H., i, 1869, 556 (tierra caliente of Vera Cruz, up to 1,000 m.); La Naturaleza, v, 1881, 248 (Omealca, Vera Cruz).—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1870, 837 (San Pedro, Honduras).—BOUCARD, Liste Ois. réc. Guat., 1878, 38.—NUTTING, Proc. U. S. Nat. Mus., vi, 1883, 405 (Los Sábalos, Nicaragua; habits; food).—RIDGWAY, Proc. U. S. Nat. Mus., xiv, 1891, 471 (San Pedro Sula, Honduras).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 197.—RICHMOND, Proc. U. S. Nat. Mus., xvi, 1893, 500 (Rio Escondido, Nicaragua; habits, notes, etc.).
- [*Thamnophilus*] *melanocrissus* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 69.—SHARPE, Hand-list, iii, 1901, 10.
- D[iallactes] melanocrissus* CABANIS, Journ. für Orn., 1872, 234 (Mexico; crit.).
- [*Diallactes*] *melanocrissus* HEINE and REICHENOW, Nomencl. Mus. Hein. Orn., 1890, 129 (Mexico).
- Thamnophilus transandeanus*+*Thamnophilus melanocrissus* BANGS, Bull. Mus. Comp. Zool., xxxix, 1903, 150 (Céiba, Honduras; crit.).
- Thamnophilus hollandi* LAWRENCE, Ann. Lyc. Nat. Hist. N. Y., viii, 1867, 180 (Greytown, Nicaragua; coll. U. S. Nat. Mus.).—SALVIN, Ibis, 1874, 310 (crit.).

- (?) *D[iallactes] granadensis* CABANIS, Journ. für Orn., May, 1872, 234 (Bogotá, Colombia; coll. Berlin Mus.?).
- (?) *Thamnophilus transandeanus granadensis* MENEGAUX and HELLMAYR, Bull. Soc. Philom. Paris, ser. 9, viii, 1906, 25 (Bogotá and Antioquia, Colombia; Mérida, Venezuela; crit.).

Genus **HYPOLOPHUS** Cabanis and Heine.

*Hypolophus*<sup>a</sup> CABANIS and HEINE, Mus. Hein., ii, Aug., 1859, 16. (Type, *Turdus cirrhatu*s Gmelin=*Lanius canadensis* Linnæus.)

Medium-sized Formicariidæ (length about 150 mm.) with strong, compressed, and conspicuously-hooked bill, crested pileum, tail four-fifths as long as wing, and exposed culmen longer than middle toe with claw; adult males with head, neck, chest, and median portion of breast and abdomen uniform black, sides and flanks white or light gray, wings and tail black varied with white; adult females brownish above (the wings varied with buff or whitish, pileum blackish or rufescent), the under parts plain buffy.

Bill nearly as long as head (exposed culmen longer than middle toe with claw), stout, slightly to much compressed, the maxilla conspicuously hooked and notched; width at frontal antiæ decidedly less than depth at same point (*H. melanonotus*) or slightly greater than depth (*H. canadensis*), equal to less than half the distance from nostril to tip of maxilla (*H. melanonotus*) or more than half (*H. canadensis*); culmen moderately (*H. canadensis* to rather sharply ridged (*H. melanonotus*), nearly straight or very slightly convex for most of its length, strongly and rather abruptly decurved terminally, the tip of maxilla conspicuously uncinatè; maxillary tomium nearly straight, distinctly notched and slightly toothed subterminally; mandible recurved and acute at tip, the tomium distinctly notched and toothed subterminally; gonys moderately convex, ascending terminally rather prominent basally. Nostril exposed, roundish or broadly oval, with an interior tubercle partly visible in upper posterior portion. Rictal bristles indistinct or obsolete, but loreal feathers sometimes with shafts slightly elongated and thickened; feathers of chin, malar antiæ, and frontal antiæ with more or less distinct bristly tips.<sup>b</sup> Wing moderate in length, rather pointed (primaries decidedly longer than secondaries); sixth and seventh primaries longest, tenth (outermost) more than three-fifths as long as the longest, ninth about equal to secondaries. Tail about four-fifths as long as wing, slightly (*H. canadensis*) to much (*H. melanonotus*) rounded, the rectrices (12) moderately broad, with rounded tip. Tarsus decidedly longer than exposed culmen, about one-third as long as wing, distinctly scutellate, the plantar scutella in two longitudinal series; middle toe, with claw,

<sup>a</sup> "Von *ὀπλόφος* (subcristatus)." (Cabanis and Heine.)

<sup>b</sup> These bristly points are much more strongly developed in *H. melanonotus* than in *H. cirrhatu*s, as are also those of the loreal region.



much shorter than tarsus; outer toe, without claw, reaching to beyond middle of subterminal phalanx of middle toe, the inner toe decidedly shorter; hallux about as long as inner toe but much stouter; basal phalanx of middle toe wholly united to outer toe, united for about half its length to inner toe; claws strongly curved, much compressed, that of the hallux decidedly shorter than its digit. Plumage full, lax, and blended, that of the rump much lengthened and fluffy; feathers of pileum elongated, especially on occiput, forming a distinct decumbent crest.

*Coloration*.—Adult males with head, neck, chest, and median portion of breast (usually of abdomen also) uniform black, the sides and flanks white or light gray; wings and tail black varied with white, the back brown or grayish, or black with a large concealed patch of white; adult females olive-brown to tawny-brown above, the wings dusky varied with buffy or whitish, the pileum blackish or rufescent; under parts plain buffy (more whitish on throat and abdomen).

*Range*.—Northern Colombia to Cayenne, southeastern Brazil, Bolivia, and northern Peru. (About seven species.)

#### **HYPOLOPHUS CANADENSIS PULCHELLUS (Cabanis and Heine).**

##### **COLOMBIAN CRESTED ANTSHRIKE.**

*Adult male*.—Pileum (including well-developed occipital crest) black, the forehead (sometimes crown also) streaked with white; back, scapulars, and rump plain cinnamon or russet, the scapulars and interscapulars with indistinct narrow mesial streaks of darker; outer row of scapulars dark brown, broadly edged with white; wing-coverts and tertials brownish black, all the former conspicuously tipped with white, the latter broadly edged with white or buffy white; secondaries and primaries dusky grayish brown (dark hair brown), the secondaries and inner primaries edged with light brown, the outer primaries edged with whitish; tail black, the rectrices broadly tipped with white, the exterior pair with outer web white (except basally); sides of head barred with black and white; chin, throat, and median portion of chest black, this sometimes continued, narrowly or brokenly, along the median line of breast, the feathers of chin and throat tipped with white; median under parts (except where occupied by the black gular-jugular area, white; lateral under parts pale gray anteriorly, passing into light cinnamon or clay color posteriorly; under wing-coverts and broad edgings to inner webs of remiges white or buffy white; maxilla brownish black, mandible sometimes more brownish (bluish gray in life?); legs and feet horn color (in dried skins); wing, 69–75 (72); culmen, 18–20 (19); tarsus, 27–27.5 (27.2); middle toe, 14.5–16 (15.2).<sup>a</sup>

<sup>a</sup> Two specimens.



*Adult female*.—Pileum deep cinnamon-rufous or rufous-chestnut; back, scapulars, and rump plain buffy cinnamon, the first deeper, inclining to russet; outer row of scapulars grayish brown, broadly edged with buff; wings and tail as in adult male, but the former with markings buff instead of white, and ground color of coverts less dark; sides of head, chin, and throat, pale buff or buffy white, the former barred and streaked with blackish; rest of under parts plain buff or clay color, slightly paler medially, especially on abdomen; maxilla horn color, mandible much paler; legs and feet horn color (in dried skins); wing, 69–73.5 (71.8); tail, 56–61 (58); culmen, 18–18.5 (18.2); tarsus, 26–26.5 (26.2); middle toe, 14–15 (14.5).<sup>a</sup>

Northern Colombia (Rio Atrato; Rio Truando; Cartagena; Sabanilla; Barranquilla; Santa Marta, Bonda, and Cienega, Santa Marta; Valencia).

*Hypolophus pulchellus* CABANIS and HEINE, Mus. Hein., ii, Aug., 1859, 16 (Cartagena, Colombia; coll. Heine Mus.).

*Thamnophilus pulchellus* BERLEPSCH, Ibis, Apr., 1881, 245 (crit.).—SCLATER, Cat. Birds Brit. Mus., xv, 1890, 204 (Valencia, Santa Marta, and Barranquilla, Colombia).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 201 (Rio Truando, Santa Marta, and Cartagena, n. Colombia).—ALLEN, Bull. Am. Mus. N. H., xiii, 1900, 161 (Bonda and Cienega, Santa Marta, Colombia).

[*Thamnophilus*] *pulchellus* SHARPE, Hand-list, iii, 1901, 15.

*Thamnophilus*, sp.?, CASSIN, Proc. Ac. Nat. Sci. Philad., 1860, 189, no. 88 (Rio Truando).

*Thamnophilus leucauchen* (not of Sclater, 1855), SCLATER, Cat. Am. Birds, 1862, 174, part (Santa Marta).—SALVIN and GODMAN, Ibis, 1881, 171 (Santa Marta).

### Genus THAMNOPHILUS Vieillot.

*Thamnophilus* *b* VIEILLOT, Analyse, 1816, 40; Nouv. Dict. d'Hist. Nat., iii, 1816, 308.<sup>c</sup> (Type, *Pie-Grieche rayee*—Fourmillier *huppé* Buffon=*Lanius doliaetus* Linnaeus.)

*Tamnophilus* VIEILLOT, Analyse, 1816, 70.—D'ORBIGNY and LAFRESNAYE, Mag. de Zool., 1849 (Synop. Av., p. 10).

Medium-sized Formicariidae (length about 150–160 mm.) with bill much shorter than head, not compressed, its terminal unguis small; adult males with under parts (usually upper parts also) conspicuously barred with black and white, or (in *T. virgatus*) dull slate-gray streaked with whitish; adult females and young tawny or rufous above, ochraceous or buff below.<sup>d</sup>

Bill much shorter than head (exposed culmen shorter than middle toe with claw), broader than deep at frontal antiae, where its width is equal to much more than half the distance from nostril to tip of maxilla; culmen broad, indistinctly ridged, slightly convex from

<sup>a</sup> Three specimens. (All the specimens examined are in bad condition, and some measurements can not be made from them.)

<sup>b</sup> From *τάμνος*, *frutex*, and *φιλέω*, *gaudeo*. (Vieillot.)

<sup>c</sup> Type given as "*Lanius turdus* Lath[am]."

<sup>d</sup> The female and young of *T. virgatus* unknown, however.

near base, more strongly decurved terminally, the tip of mandible distinctly but not strongly uncinat; maxillary tomium faintly concave, distinctly notched subterminally; mandibular tomium nearly straight, minutely but distinctly notched and toothed subterminally, the tip of mandible acute, recurved; gonys moderately convex, ascending terminally, rather prominent basally. Nostril exposed, broadly longitudinally oval, with the internal tubercle barely visible in upper posterior portion. Rictal bristles present but very small, shorter than the terminal setæ to feathers of chin. Wing moderate, with longest primaries projecting slightly but decidedly beyond secondaries; fifth and sixth primaries longest, the seventh but little shorter; tenth (outermost) about three-fifths as long as longest, the ninth shorter than secondaries. Tail about as long as wing (at least five-sixths as long), much rounded (graduation equal to or exceeding length of exposed culmen), the retrices (12) moderately broad, rounded terminally. Tarsus equal to or longer than commissure, about one-third as long as wing, distinctly scutellate, the plantar scutella in two longitudinal series, elongate-quadrate or lozenge shaped; middle toe, with claw, much shorter than tarsus (toe alone shorter than exposed culmen); outer toe, without claw, reaching to or a little beyond middle of subterminal phalanx of middle toe, the inner toe a little shorter; hallux about as long as inner toe, but much stouter; basal phalanx of middle toe wholly united to outer toe, united to inner toe for about half its length; claws moderate in size and curvature, that of the hallux much shorter than its digit. Plumage full, lax, and blended, that of the rump elongated, fluffy; feathers of crown and occiput (especially the latter) elongated, distinctly outlined, forming a distinct but not conspicuous decumbent crest.

*Coloration*.—Adult males with under parts (usually the upper also) conspicuously barred with black and white, or else (in *T. virgatus*) dull slate-gray, streaked with whitish; adult females and young tawny or rufescent above, ochraceous or buffy below.

*Nidification*.—Nest pensile, suspended from a fork like that of a Vireo. Eggs white or creamy white, marked with brownish spots or streaks.

*Range*.—Southern Mexico to Cayenne, Paraguay, Bolivia, and Peru. (About ten species, not including subspecies.)

#### KEY TO THE SPECIES AND SUBSPECIES OF THAMNOPHILUS.<sup>a</sup>

a. Plumage wholly black and white, in transverse bars.

b. Pileum wholly black. (Eastern Panamá, including San Miguél Island, and Caribbean coast of Colombia.)

*Thamnophilus radiatus nigricristatus*, adult male (p. 37).

<sup>a</sup> Owing principally to lack of sufficient material this key is confined mainly to the forms belonging properly to the present work and is by no means as satisfactory as is desirable.

bb. Pileum partly white.

c. Pileum with more or less of white on basal portion of feathers. (*Thamnophilus doliatus*.)

d. Darker, with white bars of upper parts narrower and black bars of under parts broader.

e. Wing averaging longer (75.5 in adult male),<sup>a</sup> tail relatively shorter (averaging 63 in adult male). (Guianas; Venezuela?).

*Thamnophilus doliatus doliatus*, adult male (extralimital).<sup>b</sup>

ee. Wing averaging shorter (72.6 in adult male), tail relatively longer (averaging 62.8 in adult male). (Atlantic slope of Mexico, except Yucatan and Campeche, and Central America.)

*Thamnophilus doliatus mexicanus*, adult male (p. 40).

dd. Paler, with white bars of upper parts broader and black bars of under parts narrower.

e. Averaging smaller (wing averaging 70.1, tail 58.4), with black bars on under parts usually broader. (Pacific slope, from Chiapas to western Panama.).....*Thamnophilus doliatus pacificus*, adult male (p. 43).

ee. Averaging larger (wing averaging 72, tail 63.2), with black bars on under parts usually narrower. (Yucatan and Campeche.)

*Thamnophilus doliatus yucatanensis*, adult male (p. 44).

cc. Pileum spotted or barred with white. (Eastern Panama and Colombia.)

*Thamnophilus multistriatus*, adult male (p. 45).

aa. Plumage largely rufescent (back, wings, etc., plain chestnut or tawny).

b. Under parts dull slate-gray streaked with whitish. (*Thamnophilus virgatus*.)

c. Wings and tail clearer chestnut-tawny (more rufescent); white streaks on pileum broader, those on under parts extended over greater part of abdomen. (Northwestern Colombia.).....*Thamnophilus virgatus virgatus* (p. 46).

cc. Wings and tail duller chestnut-tawny (more cinnameous); white streaks on pileum narrower, those on under parts also narrower and on abdomen confined to median line. (Central Colombia.)

*Thamnophilus virgatus nigriceps* (extralimital).<sup>c</sup>

bb. Under parts buffy or tawny (with or without transverse bars).

c. Under parts distinctly barred with blackish.

*Thamnophilus multistriatus*, adult female (p. 45).

cc. Under parts not distinctly if at all barred.

*Thamnophilus radiatus* and subspecies, adult female.<sup>d</sup>

*Thamnophilus doliatus* and subspecies, adult female.<sup>d</sup>

<sup>a</sup> No females of this form have been examined by me.

<sup>b</sup> [*Lanius*] *doliatus* Linnaeus, Syst. Nat., ed. 12, i, 1766, 138 (South America; based on *Lanius cayanaensis striatus* Brisson, Orn., ii, 187; etc.).—*Thamnophilus doliatus* Vieillot, Nouv. Dict. d'Hist. Nat., iii, 1816, 315 (Cayenne); Scclater, Cat. Birds Brit. Mus., xv, 1890, 207, part.—[*Lanius*] (*ferrugineus*) (not of Gmelin, 1788) Richard and Bernard, Actes de la Soc. d'Hist. Nat. Paris, i, pt. i, 1792, 116 (Cayenne).—*Lanius (ferruginatus)* Reich (G. C.), Mag. des Thierreichs, i, Abth. 3, 1795, 129 (emendation of *L. ferrugineus* Richard and Bernard).—*Lanius rubiginosus* Bechstein, Allgem. Übers. de Vögel, i, 1793, 696 (new name for *L. ferrugineus* Richard and Bernard); Latham, Index Orn., Suppl., 1801, p. xix.

<sup>c</sup> *Thamnophilus nigriceps* Scclater, Proc. Zool. Soc. Lond., 1868, 571 (Bogotá, Colombia; coll. P. L. Scclater); Cat. Birds Brit. Mus., xv, 1890, 194, pl. 12.

<sup>d</sup> The differences between adult females of the several forms of these two species are not sufficiently definite to be intelligibly expressed in a key—at least not without expenditure of much more time than I am able to give the subject.



**THAMNOPHILUS RADIATUS NIGRICRISTATUS (Lawrence).****BLACK-CRESTED ANTSHRIKE.**

Similar to *T. doliatus* and its subspecies <sup>a</sup> but adult males with elongated feathers of pileum entirely black. Still more like *T. radiatus* <sup>b</sup> but coloration darker, in both sexes.

*Adult male*.—Pileum, except sides of occiput (supra-auricular region) and more or less of forehead, uniform black (without concealed white, except, sometimes, a very little on the occiput); rest of upper parts black barred, more or less broadly, with white, the white bars never as wide as the black interspaces, sometimes reduced to transverse spots; forehead usually more or less (sometimes extensively) streaked with white; sides of occiput (supra-auricular region), streaked with black and white, the black streaks usually broader than the white ones; auricular and malar regions and sides of neck similarly streaked, but the black streaks rather narrower; under parts white, the chin and throat usually streaked (sometimes broadly) with black, the remaining under parts (except, sometimes, abdomen) barred with black, the black bars usually much narrower than the white interspaces but sometimes nearly as broad, especially on flanks; maxilla blackish, paler on tomium; mandible grayish (sometimes whitish terminally and on tomium), bluish gray in life; iris straw color;<sup>c</sup> legs and feet dusky (bluish gray in life?); length (skins), 138–158 (149); wing, 67.5–72 (70.2); tail, 54–61 (56.8); culmen, 17–19.5 (18.3); tarsus, 26–27.5 (26.7); middle toe, 14.5–17 (16.4).<sup>d</sup>

*Adult female*.—Pileum deep chestnut, becoming paler (more tawny) on forehead; hindneck broadly streaked with black and ochraceous or tawny; wings and tail uniform deep cinnamon-rufous or chestnut-rufous, the back, scapulars, and rump similar but usually lighter and more tawny-rufous; sides of head (including supra-auricular region) buffy whitish, buffy, ochraceous, or pale tawny, streaked (except on lores) with black, the black streaks broader on supra-auricular region, narrower (sometimes nearly obsolete) on anterior portion of malar region; chin and throat immaculate, very pale buffy

<sup>a</sup> The individual variation in this form seems to include as great extremes of coloration, as regards relative width of black and white bars in the adult male and intensity of coloration in the female, as is covered by the geographic variations in *T. doliatus*!

<sup>b</sup> *Thamnophilus radiatus* Vieillot, Nouv. Dict. d'Hist. Nat., iii, 1816, 315; Slater, Cat. Birds Brit. Mus., xv, 1890, 210. Several subspecies have been described, but I have not been able to secure sufficient material to enable me to characterize them satisfactorily. They are involved in much confusion and require careful revision.

<sup>c</sup> W. W. Brown, jr., on label.

<sup>d</sup> Thirteen specimens from Panama (mainland).

to ochraceous-buff; rest of under parts plain deep buff to nearly ochraceous-buff (or between ochraceous-buff and clay color); length (skins), 134-155 (147); wing, 67-71 (68.6); tail, 54-59 (56.3); culmen, 17-20 (18.7); tarsus, 25-27 (26.1); middle toe, 15-16.5 (15.8).<sup>a</sup>

<sup>a</sup> Eight specimens from Panamá (mainland).

The series examined from Panamá comprises three adult males in dark, heavily barred plumage, like the type, and ten which are more or less decidedly lighter in color, some of them indistinguishable, so far as I am able to see, from Colombian examples labeled *Thamnophilus albicans*. In fact, unless there are two forms of the species in Panamá, which is hardly probable, the individual variation in this species is much greater than in *T. doluiatus*, which is reasonably constant within definite geographic areas. At present I have neither the material nor time necessary for more satisfactorily working out the problem, which, judging from the material examined, is a very complicated one.

The following measurements of specimens belonging to the *radiatus* group are given below for comparison with those of Panamá examples:

| Locality.                                                                              | Wing. | Tail. | Culmen. | Tarsus. | Middle toe. |
|----------------------------------------------------------------------------------------|-------|-------|---------|---------|-------------|
| MALES.                                                                                 |       |       |         |         |             |
| Thirteen adult males ( <i>T. radiatus nigricristatus</i> ) from Panamá mainland.....   | 70.2  | 56.8  | 18.3    | 26.7    | 16.4        |
| Three adult males ( <i>T. radiatus nigricristatus</i> ?) from San Miguel Island.....   | 73.3  | 57.8  | 18.8    | 26.6    | 16.2        |
| One adult male ( <i>T. radiatus nigricristatus</i> ?) from Cartagena, Colombia.....    | 70.5  | 57    | 18      | 27      | 16          |
| One adult male ( <i>T. radiatus nigricristatus</i> ?) from Santa Marta, Colombia.....  | 71.5  | 53    | 18.5    | 26      | 16          |
| Four adult males ( <i>T. radiatus albicans</i> ?) from Bogotá, Colombia.               | 75.5  | 61.7  | 19.4    | 26      | 15.8        |
| Six adult males ( <i>T. radiatus subradiatus</i> ) from Upper Amazons.                 | 72.7  | 59.4  | 18.5    | 26.3    | 15.6        |
| One adult male ( <i>T. radiatus</i> —?) from Lower Amazon.....                         | 78    | 64    | 19      | 25.5    | 17          |
| One adult male ( <i>T. radiatus difficilis</i> ) from Goyaz, Brazil.....               | 74    | 64    | 19      | 27      | 16          |
| Four adult males ( <i>T. radiatus capistratus</i> ) from Bahia, Brazil..               | 77    | 65    | 18.5    | 26.5    | 16          |
| Ten adult males ( <i>T. radiatus radiatus</i> ) from southern Brazil and Paraguay..... | 74.1  | 63.8  | 17.6    | 26.6    | 15.8        |
| FEMALES.                                                                               |       |       |         |         |             |
| Eight adult females from Panamá (mainland).....                                        | 68.6  | 56.3  | 18.7    | 26.1    | 15.8        |
| Five adult females from San Miguel Island.....                                         | 72.4  | 56.9  | 18.3    | 26.6    | 15.5        |
| One adult female from Cartagena, Colombia.....                                         | 67    | 52.5  | 18      | 26.5    | 15          |
| One adult female from Bonda, Santa Marta, Colombia.....                                | 72.5  | 60    | 19.5    | 27.5    | 15.5        |
| One adult female from Bogotá, Colombia.....                                            | 73.5  | 59    | 18.5    | 28      | 16          |
| Three adult females from Upper Amazons.....                                            | 70.5  | 58.2  | 19.2    | 26.2    | 16.2        |
| One adult female from Ceara, Brazil.....                                               | 75    | 62    | 17.5    | 27      | 16          |
| One adult female from Goyaz, Brazil.....                                               | 73.5  | 61.5  | 18      | 27      | 15.5        |
| One adult female from Bahia, Brazil.....                                               | 72    | 63    | 17.5    | 23.5    | 14.5        |
| Two adult females from Chapada, Mattogrosso, Brazil.....                               | 71.2  | 62.7  | 18      | 26.3    | 16          |

State of Panamá (Panamá; Sabana de Panamá; Paraiso Station; Loma del León; Mina de Chorchá, Chitra, Calobre, and Calovévora. Verágua; San Miguél Island?);<sup>a</sup> Caribbean coast district of Colombia (Cartagena; Santa Marta).

*Thamnophilus doliatus* (not *Lanius doliatus* Linnæus) LAWRENCE, Ann. Lyc. N. Y., vii, 1862, 293 (Lion Hill, Panamá).—BANGS, Proc. New Engl. Zool. Club, ii, 1900, 24 (Lion Hill).

*Thamnophilus radiatus* (not of Vieillot) SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1864, 355 (Panamá; crit.).—SALVIN, Ibis, 1870, 194 (Chitra and Calovévora, Verágua, Panamá).

[*Thamnophilus*] *radiatus* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 70, part (Panama).

*Thamnophilus nigricristatus* LAWRENCE, Proc. Acad. Nat. Sci. Phila., 1865, 107 (Lion Hill, Panamá; coll. G. N. Lawrence).—RIDGWAY, Proc. U. S. Nat. Mus., x, 1887, 581, footnote (crit.).—SCLATER, Cat. Birds Brit. Mus., xv, 1890, 209, part (Mina de Chorchá, Chitra, Paraiso Station, and Panamá, Panamá; Santa Marta, Colombia).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 204, part (Mina de Chorchá, Chitra, Calovévora, Calobre, Paraiso Station, and Lion Hill, Panamá).—THAYER and BANGS, Bull. Mus. Comp. Zool., xlv, 1905, 150 (San Miguél I., Panamá), 216 (Sabana de Panamá).

[*Thamnophilus*] *nigricristatus* SHARPE, Hand-list, iii, 1901, 15 (Panamá; Colombia).

*Th[amnophilus] nigricristatus nigricristatus* HELLMAYR, Verh. k. k. zool.-bot. Gesellsch. Wien, May 22, 1903, 217.

*Thamnophilus radiatus nigricristatus* ALLEN, Bull. Am. Mus. N. H., v, 1893, 118 (Panamá).

*Thamnophilus doliatus nigricristatus* BANGS, Auk, xviii, Jan., 1901, 30 (San Miguél I., Panamá).

*Thamnophilus affinis* (not of Spix, 1825, D'Orbigny and Lafresnaye, 1837, nor Cabanis and Heine, 1859) SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1864, 355 (Panamá).

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<sup>a</sup> The birds of San Miguél Island possibly separable, perhaps referable to *T. r. albicans*, on account of their larger size.



## THAMNOPHILUS DOLIATUS MEXICANUS Allen.

## MEXICAN ANTSHRIKE.

Similar in coloration to *T. d. doliatus*,<sup>a</sup> but wing averaging much shorter and tail relatively longer.

*Adult male*.—Above black, the forehead spotted or streaked, more or less, with white, the elongated feathers of crown white (mostly concealed) with a large apical guttate spot of black, the remaining upper parts barred with white (the white bars always much less than half as wide as the black interspaces), the white bars on rectrices and tertials not reaching to shaft (except terminal bar on tertials); sides of head, chin, and throat streaked with black and white, the first with the two colors about equal in amount, the chin and throat with the white usually predominating; rest of underparts broadly and sharply barred with black and white, the bars of the two colors of nearly equal width, except (sometimes) on center of abdomen, where the black bars are narrower; maxilla brownish black, pale grayish blue along tomium; mandible pale grayish blue; iris yellow; legs and feet grayish dusky (grayish blue in life); length (skins), 138–167 (156.5); wing, 68.5–78.5 (72.6); tail, 57.5–69 (62.8); culmen, 18.5–20.5 (19.6); tarsus, 25–28 (26.6); middle toe, 14.5–17 (15.5).<sup>b</sup>

*Immature male*.—Similar to the adult male but plumage more or less strongly suffused with pale ochraceous.

*Adult female*.—Pileum bright chestnut or rufous-chestnut, paler on forehead; supra-auricular region, hindneck and sides of neck light ochraceous or buffy (sometimes buffy whitish on sides of neck), broadly streaked with black; rest of upper parts plain cinnamon-rufous or tawny-chestnut, usually paler and tinged, more or less, with olive-ochraceous on rump and upper back; a narrow orbital ring of buff or buffy white; loreal, suborbital auricular, and malar regions buff or buffy whitish, more or less streaked or flecked with black (most heavily on auricular region); chin and throat pale buff to ochraceous-buff, often more or less streaked (mostly laterally or posteriorly) with black or dusky; rest of underparts ochraceous or ochraceous-buff, deepest on chest and sides, paler on abdomen, where sometimes pale buff; usually the underparts are quite immaculate, but rarely there are indications of dusky bars on breast and tibia, and often more or less distinct blackish or dusky spots or streaks on upper chest; under wing-coverts clear buff or ochraceous-buff, the inner webs of remiges broadly edged with pinkish vinaceous-buff or vinaceous-cinnamon; maxilla dark brown or blackish brown, whitish (in dried skins) along tomium; mandible pale horn color or dull whitish in dried skins (light bluish gray in life); iris white or

<sup>a</sup> True *T. doliatus* is confined to Cayenne, Surinam, and British Guiana (see p. 36).

<sup>b</sup> Twenty-nine specimens.

pale yellow; legs and feet grayish dusky or horn color (bluish gray in life); length (skins), 140-166 (155); wing, 65.5-77 (71.8); tail, 56-68 (62.2); culmen, 18.5-20 (19.4); tarsus, 25.5-29 (26.8); middle toe, 14.5-17 (15.8).<sup>a</sup>

*Young female (first plumage).*—Somewhat like the adult female but duller rufous or rufous-tawny above; the pileum, back, scapulars, and rump rather broadly barred with blackish; underparts pale buffy, deeper on chest, everywhere (except on lower abdomen) irregularly barred (more spotted on throat) with dusky.

Eastern Mexico, in States of Tamaulipas (Tampico; Alta Mira), Vera Cruz (Playa Vicente; Jalapa; Coátepec; Córdoba; Huatusco; Choapám; Misantla; Orizaba; Miradór; Tlalcotalpám; Otatitlán; Papantla; Tolosa; Buena Vista; Potrero), Puebla (Teziutlán; Met-

<sup>a</sup> Thirty-four specimens.

| Locality.                                                                            | Wing. | Tail. | Culmen. | Tarsus. | Middle toe. |
|--------------------------------------------------------------------------------------|-------|-------|---------|---------|-------------|
| MALES.                                                                               |       |       |         |         |             |
| Ten adult males from Puebla, Vera Cruz, and Tabasco, e. Mexico.....                  | 73.7  | 65.5  | 19.7    | 27.8    | 16.2        |
| Nine adult males from Guatemala (6) and Chiapas (3).....                             | 70.5  | 62.1  | 19.6    | 26.6    | 15.4        |
| Ten adult males from Honduras.....                                                   | 72.6  | 60.2  | 19.6    | 26.1    | 15.2        |
| Six adult males from eastern Nicaragua.....                                          | 71.4  | 58.7  | 19.2    | 26.4    | 15.4        |
| Ten adult males ( <i>T. d. yucatanensis</i> ) from Yucatan (9) and Campeche (1)..... | 72.1  | 63.2  | 19.1    | 26.2    | 15.2        |
| One adult male ( <i>T. d. pacificus?</i> ) from western Chiapas.....                 | 74    | 65    | 19      | 27      | 16          |
| Three adult males ( <i>T. d. pacificus</i> ) from western Nicaragua....              | 68    | 55.7  | 19.2    | 25.7    | 15.2        |
| Ten adult males ( <i>T. d. pacificus</i> ) from western Costa Rica.....              | 70.6  | 59.2  | 19.5    | 26      | 15.1        |
| Five adult males from ( <i>T. d. pacificus</i> ) from western Panamá.....            | 69.7  | 57.1  | 19.5    | 26.2    | 15.5        |
| Three adult males ( <i>T. d. doliatus?</i> ) from Venezuela (mainland)....           | 69    | 56    | 18.8    | 26      | 14.8        |
| Three adult males ( <i>T. d. doliatus?</i> ) from Margarita I., Venezuela.           | 70.2  | 54.7  | 18.3    | 24.8    | 14.2        |
| Five adult males ( <i>T. d. doliatus</i> ) from Guianas.....                         | 75.5  | 63    | 19.4    | 26      | 15.9        |
| Ten adult males ( <i>T. d. fraterculus</i> ) from Trinidad.....                      | 71.1  | 57.5  | 19.8    | 26.6    | 15.4        |
| Four adult males ( <i>T. d. fraterculus</i> ) from Tobago.....                       | 74    | 59.1  | 19.7    | 27.4    | 14.9        |
| FEMALES.                                                                             |       |       |         |         |             |
| Twelve adult females from Tamaulipas, Vera Cruz, Oaxaca, and Tabasco.....            | 71.8  | 65.2  | 19.4    | 27.2    | 15.8        |
| Nine adult females from Guatemala (7) and Chiapas (2).....                           | 68.7  | 61.5  | 19.1    | 26.6    | 15.4        |
| Seven adult females from Honduras.....                                               | 72.6  | 61    | 19.3    | 26.7    | 15.6        |
| Five adult females from eastern Nicaragua.....                                       | 68.3  | 58    | 18.9    | 26.2    | 15          |
| One adult female from eastern Costa Rica.....                                        | 69    | 60.5  | 18.5    | 26      | 15.5        |
| Four adult females ( <i>T. d. yucatanensis</i> ) from Yucatan.....                   | 71    | 64    | 19.6    | 27      | 16          |
| One adult female ( <i>T. d. pacificus?</i> ) from western Chiapas.....               | 72    | 63    | 19      | 27      | 16.5        |
| One adult female ( <i>T. d. pacificus</i> ) from western Nicaragua....               | 71    | 59    | 19      | 26.5    | 15.5        |
| Nine adult females ( <i>T. d. pacificus</i> ) from western Costa Rica...             | 67.8  | 57.5  | 19      | 26.1    | 15.6        |
| Six adult females ( <i>T. d. pacificus</i> ) from western Panamá.....                | 68.2  | 57.2  | 18.7    | 26      | 15.4        |
| Two adult females ( <i>T. d. doliatus?</i> ) from Venezuela (mainland)....           | 68.7  | 58.7  | 18.2    | 25      | 15.2        |
| Three adult females ( <i>T. d. doliatus?</i> ) from Margarita I., Venezuela.....     | 69.2  | 55.7  | 18.2    | 25.5    | 15          |
| Six adult females ( <i>T. d. fraterculus</i> ) from Trinidad.....                    | 69    | 56    | 18.7    | 26.6    | 15.3        |
| Three adult females ( <i>T. d. fraterculus</i> ) from Tobago.....                    | 73    | 57.5  | 18.8    | 26.2    | 15.2        |

laltoyuca), San Luís Potosí (Vallés), Guanajuato?, Oaxaca (Choapám; Tomatla; Hueytalco; Tonagua; Santa Efigénia; Tapaná; Tuxtepec; mountains near Santo Domingo), Tabasco (Teapa; Frontera) and Chiapas (Yajalón; Huehuetán), through Guatemala (Choctúm; Dueñas; Cajabón; San Gerónimo; Cobán; Chapulco; Los Amates, Yzabál; Rio Managua), British Honduras (Orange Walk; Belize; San Antonio; Cayo; Toledo District; Manatee Lagoon), Honduras (Omoa; San Pedro; San Pedro Sula; Truxillo; Santa Ana; Céiba) and eastern Nicaragua (Greytown; Los Sábalos; Rio Escondido; San Emilis, Lake Nicaragua) to eastern Costa Rica (Jiménez; Juan Viñas; Guayabo; Cartago?; Naranjo de Cartago?; Sarchí?; Boruca?).

(?) *Thamnophilus doliatus* (not *Lanius doliatus* Linnæus) BONAPARTE, Proc. Zool. Soc. Lond., 1837, 117 (Guatemala; descr.).—FRANTZIUS, Journ. für Orn., 1869, 305 (Costa Rica).

*Thamnophilus doliatus* SCLATER, Proc. Zool. Soc. Lond., 1858, 217, part (monogr.); 1859, 383 (Choapám, Oaxaca; Playa Vicente, Vera Cruz); Cat. Birds Brit. Mus., xv, 1890, 207, part.—SCLATER and SALVIN, Ibis, 1859, 118 (Dueñas, Guatemala; habits).—LAWRENCE, Ann. Lyc. N. Y., ix, 1868, 107 (Costa Rica).—SUMICHRAST, Mem. Bost. Soc. N. H., i, 1869, 556 (temperate reg. Vera Cruz, up to 1250 m.).—BOUCARD, Liste Ois. récol. Guat., 1878, 38.—FERRARI-PEREZ, Proc. U. S. Nat. Mus., ix, 1886, 156 (Teziutlán, Puebla; Jalapa, Vera Cruz).—ZELEDÓN, Anal. Mus. Nac. Costa Rica, i, 1887, 144, part (Cartago, Naranjo de Cartago, and Jiménez, Costa Rica).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1891, 202, part (Tampico, Tamaulipas; Jalapa, Coátepec, Misantla, Orizaba, Huatusco, Córdova, Choapám, and Playa Vicente, Vera Cruz; Tomatla, Hueytalco, Tonagua, Santa Efigénia, and Tapaná, Oaxaca; Teapa, Tabasco; Orange Walk, Belize, San Antonio and Cayo, Brit. Honduras; Choctúm, Cajabón, Chiséc, Cobán, and San Gerónimo, Guatemala; Omoa, San Pedro, and Truxillo, Honduras; Los Sábalos and Greytown, Nicaragua; Jiménez, Cartago, and Naranjo de Cartago, Costa Rica).—RICHMOND, Proc. U. S. Nat. Mus., xvi, 1893, 500 (Rio Escondido, Nicaragua; habits).—BANGS, Bull. Mus. Comp. Zool., xxxix, 1903, 150 (Céiba, Honduras; crit.).—DEARBORN, Pub. 125, Field Mus. N. H., 1907, 109, part (Los Amates, Yzabál, Guatemala).

*Thamnophilus doliatus?* MOORE, Proc. Zool. Soc. Lond., 1859, 57 (Omoa, Honduras).

[*Thamnophilus*] *doliatus* BONAPARTE, Consp. Av., i, 1850, 197, part.—SCLATER and SALVIN, Nom. Neotr., 1873, 70, part.—SHARPE, Hand-list, iii, 1901, 15, part.

(?) *Thamnophilus rutilus* (not of Vieillot, 1816) BONAPARTE, Proc. Zool. Soc. Lond., 1837, 117 (Guatemala; descr.; = ♀).

*T[hamnophilus] affinis* (not *Thamnophilus affinis* Spix, 1825, nor of D'Orbigny and Lafresnaye, 1837) CABANIS and HEINE, Mus. Hein., ii, Aug., 1859, 17 (Jalapa, Vera Cruz).

*Thamnophilus affinis* LAWRENCE, Ann. Lyc. N. Y., viii, 1867, 182 (Greytown, Nicaragua); ix, 1868, 107, part (Sarchí, Costa Rica).—FRANTZIUS, Journ. für Orn., 1869, 305 (Costa Rica).—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1870, 837 (Honduras).

*Thamnophilus doliatus mexicanus* ALLEN, Bull. Am. Mus. N. H., ii, June 28, 1889, 151 (new name for *Thamnophilus affinis* Cabanis and Heine, preoccupied; crit.).—RICHMOND, Proc. U. S. Nat. Mus., xviii, 1895, 630 (Alta Mira, Tamaulipas).—CHAPMAN, Bull. Am. Mus. N. H., x, 1898, 32 (Jalapa, Vera Cruz).—



RIDGWAY, Proc. Biol. Soc. Wash., xxi, 1908, 192 (geog. range).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 603 (Caribbean foothills, n. e. Costa Rica; habits).—FERRY, Pub. 146, Field Mus. N. H., orn. ser., i, no. 6, 1910, 271 (Guayabo, Costa Rica).

*Thamnophilus intermedius* RIDGWAY, Proc. U. S. Nat. Mus., x, Aug. 6, 1888, 581 (Truxillo, Honduras; coll. U. S. Nat. Mus.).

### THAMNOPHILUS DOLIATUS PACIFICUS Ridgway.

#### PACIFIC ANTSHRIKE.

Similar to *T. d. mexicanus* but adult male with under parts decidedly paler (black bars decidedly, sometimes very much, narrower than white interspaces, and black streaks on throat very narrow);<sup>a</sup> adult female not constantly if at all different, but sometimes paler, either above or below.

*Adult male*.—Length (skins), 141–163 (149); wing, 67–74.5 (70.1); tail, 55–65 (58.4); culmen, 18–20.5 (19.4); tarsus, 25–27.5 (26.1); middle toe, 14.5–16 (15.3).<sup>b</sup>

*Adult female*.—Length (skins), 130–158 (145); wing, 65.5–72 (68.4); tail, 55–63 (57.8); culmen, 17–19.5 (19.3); tarsus, 24.5–27 (26.3); middle toe, 15–16.5 (15.5).<sup>c</sup>

Pacific slope of Central America, from western Panamá (Divala; Chitra; David; Bugaba; Calovévora), through Costa Rica (Pozo Azúl de Pirris; Buenos Aires; Boruca; Lagarto; Paso Real; Puriscál; San Mateo; Bebedero; Coyoalár; La Palma de Nicoya; Barranca de Puntarenas; San Carlos; Surubres; Miravalles; San José; Sarchí; Coralillo; Bolsón; El General; Boca de Barranca; Escazú?), Nicaragua (Sucuyá; Chinandega; Volcan de Chinandega; 2 leagues south of Lake Managua; Realejo) and Guatemala (Naranjo; San José; Lake Amatitlán) to Chiapas (San Bartolomé).

(?) *Thamnophilus doliatus* (not *Lanius doliatus* Linnæus) CABANIS, Journ. für Orn., 1861, 242 (Costa Rica).

*Thamnophilus doliatus* SALVIN, Proc. Zool. Soc. Lond., 1867, 144 (David, Panama).—BOUCARD, Proc. Zool. Soc. Lond., 1878, 60 (San Mateo, Costa Rica).—NUTTING, Proc. U. S. Nat. Mus., vi, 1884, 385 (Sucuyá, Nicaragua; habits; notes).—ZELEDÓN, Anal. Mus. Nac. Costa Rica, i, 1887, 114, part (Pozo Azúl, Costa Rica).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1891, 202, part (Chinandega, Volcan de Chinandega, and Sucuyá, Nicaragua; San José, San Mateo, Sarchí, Bebedero, La Palma de Nicoya, and Pozo Azúl, Costa Rica; David and Bugaba, Panamá).—CHERRIE, Expl. Zool. Merid. Costa Rica, 1893, 41 (Lagarto, Boruca, and Buenos Aires, s. w. Costa Rica).—UNDERWOOD, Ibis, 1896, 440 (Bebedero, Costa Rica).—DEARBORN, Pub. 125, Field Mus. N. H., 1907, 109 (Lake Amatitlán and San José, Guatemala, up to 4,000 ft.).—BANGS, Auk, xxiv, 1907, 296 (Boruca, Paso Real, Lagarto, and Barranca de Puntarenas, w. Costa Rica).

<sup>a</sup> The adult male is almost precisely similar in coloration to that of *Thamnophilus doliatus fraterculus* Berlepsch and Hartert (Novit. Zool., ix, April, 1902, 70; Alta-gracia, Venezuela; coll. Count von Berlepsch) of Venezuela and Tobago.

<sup>b</sup> Nineteen specimens.

<sup>c</sup> Thirteen specimens.

- [*Thamnophilus*] *doliatus* BONAPARTE, Consp. Av., i, 1850, 197, part.—SCLATER and SALVIN, Nom. Neotr., 1873, 70, part.—SHARPE, Hand-list, iii, 1901, 15, part.
- Thamnophilus doliatus*? SALVIN, Proc. Zool. Soc. Lond., 1867, 144 (David, Panamá).
- Thamnophilus affinis* (not of Spix, 1825, Lafresnaye and D'Orbigny, 1837, nor Cabanis and Heine, 1859) LAWRENCE, Ann. Lyc. N. Y., ix, 1868, 107 (San José, Sarchí, and San Mateo, Costa Rica).—SALVIN, Proc. Zool. Soc. Lond., 1870, 194 (Bugaba, Panamá; crit.).
- Thamnophilus doliatus affinis* NUTTING, Proc. U. S. Nat. Mus., v, Sept. 5, 1882, 397 (La Palma de Nicoya, Costa Rica; habits).
- Thamnophilus radiatus* (not of Vieillot) SALVIN, Proc. Zool. Soc. Lond., 1870, 194 (Chitra and Calovévora, Panamá).
- Thamnophilus nigricristatus* (not of Lawrence) BOUCARD, Proc. Zool. Soc. Lond., 1878, 60 (San Carlos, Costa Rica).
- Thamnophilus doliatus pacificus* RIDGWAY, Proc. Biol. Soc. Wash., xxi, Oct. 20, 1908, 193 (Chinandega, Nicaragua; coll. U. S. Nat. Mus.).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 604 (Pacific lowlands and lower slopes, rarely to 3,500 ft., Costa Rica; habits).

### THAMNOPHILUS DOLIATUS YUCATANENSIS Ridgway.

#### YUCATAN ANTSHRIKE.

Similar to *T. d. pacificus* but adult male with black bars on under parts usually narrower; adult female similar to that of *T. d. pacificus* but upper parts (except pileum) averaging more ochraceous (less rufescent), with wings (sometimes back and tail also) showing more or less distinct indications of dusky bars; averaging larger.

*Adult male*.—Length (skins), 146–162 (157); wing, 69.5–75.5 (72.1); tail, 60.5–65 (63.2); culmen, 18.5–20 (19.1); tarsus, 24–27 (26.2); middle toe, 14–16 (15.2).<sup>a</sup>

*Adult female*.—Length (skins), 155–163 (159); wing, 69–73.5 (71); tail, 62–67.5 (64); culmen, 19–20 (19.6); tarsus, 26.5–27.5 (27); middle toe, 15–16 (15.7).<sup>b</sup>

Yucatan (Mérida; Chichen-Itza; Buctzotz; Peto; Temáx; Meco Island; Cozumél Island) and Campeche (Yohaltán).<sup>c</sup>

*Thamnophilus affinis* (not of Spix, 1825, D'Orbigny and Lafresnaye, 1837, nor Cabanis and Heine, 1859) LAWRENCE, Ann. Lyc. N. Y., ix, 1869, 201 (Mérida, Yucatan).—NEHRKORN, Journ. für Orn., 1881, 67 (Yucatan; descr. eggs).

*Thamnophilus doliatus* (not *Lanius doliatus* Linnæus) BOUCARD, Proc. Zool. Soc. Lond., 1883, 450 (Yucatan).—SALVIN, Ibis, 1889, 365 (Meco Island, Yucatan).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1891, 202, part (Mérida, Buctzotz, Peto, Meco I., and Cozumél I., Yucatan).

<sup>a</sup> Ten specimens.

<sup>b</sup> Four specimens.

<sup>c</sup> Specimens from Alta Mira and Tampico in Tamaulipas and Vallés, San Luís Potosí, come very near to the Yucatan form in coloration, and it is possible the latter may extend thus far northward along the narrow arid coast-belt. Specimens from Frontera, Tabasco, are intermediate in coloration between *T. d. yucatanensis* and *T. d. mexicanus*.

*Thamnophilus doliatus mexicanus* (not of Allen) CHAPMAN, Bull. Am. Mus. N. H., viii, 1896, 284 (Chichen-Itza, Yucatan; song).—COLE, Bull. Mus. Comp. Zool., 1, 1906, 131 (Chichen-Itza).

*Thamnophilus doliatus yucatanensis* RIDGWAY, Proc. Biol. Soc. Wash., xxi, Oct. 20, 1908, 193 (Temáx, Yucatan; coll. U. S. Nat. Mus.).

[*Thamnophilus*] *doliatus* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 70, part.—SHARPE, Hand-list, iii, 1901, 15, part.

### THAMNOPHILUS MULTISTRIATUS Lafresnaye.

#### BARRED-CRESTED ANTSHRIKE.

*Adult male*.—Above black, rather narrowly barred with white, the bars on tips of feathers of pileum and hindneck sometimes partaking of the form of spots (a pair on tip of each feather, separated by a rather broad median space of black); sides of head, chin, and throat streaked with black and white, the streaks broadest on throat, narrower and confused or intermixed with bars on auricular and suborbital regions; under parts of body and under tail-coverts conspicuously barred with black and white, the bars of the two colors approximately equal in width, or the white ones wider, at least on the abdomen; maxilla brownish black, the tomium pale horn color (bluish gray in life?); mandible light horn color, passing into pale yellowish terminally (bluish gray in life?); legs and feet dusky (bluish gray in life?); length (skins), 148–156 (153); wing, 70–75 (72.5); tail, 61–66.5 (63.7); culmen, 18–20 (18.4); tarsus, 22.5–25 (23.9); middle toe, 14.5–16.5 (15.1).<sup>a</sup>

*Adult female*.—Above plain bright cinnamon-rufous or rufous-chestnut, somewhat interrupted on hindneck, the back and rump sometimes duller or more tawny and with faint indications of darker bars; sides of head and neck (including sides of hindneck), together with chin and throat, conspicuously streaked with black and white; rest of under parts white, passing into pale tawny brown or fulvous on flanks, thighs, and under tail-coverts, everywhere broadly barred with black, the bars much less distinct on flanks; bill, etc., as in adult male; length (skins), 141–151 (146); wing, 72–72.5 (72.2); tail, 64–67 (65.5); culmen, 17–18.5 (17.7); tarsus, 24; middle toe, 15–15.5 (15.2).<sup>b</sup>

*Immature male*.—Similar to the adult male, but plumage suffused, more or less, with pale fulvous or brownish buff.

*Young (male?)*.—Similar in general coloration to the adult female but pileum mostly black, scapulars, interscapulars, and wing-coverts distinctly barred with dull black, and rump indistinctly barred with dusky; black bars on under parts rather narrow, the ground color very pale buff or buffy white.

<sup>a</sup> Seven specimens.

<sup>b</sup> Two specimens.



Panamá<sup>a</sup> and Colombia (Bogotá; Remédios, Medellín and Concórdia, Antioquía; Ocaña; Bucaramanga; Rio Cauca).

*Thamnophilus multistriatus* LAFRESNAYE, Rev. Zool., vii, March, 1844, 82 (Colombia).—SCLATER, Edinb. Philos. Journ., new ser., i, 1855, 238; Proc. Zool. Soc. Lond., 1855, 148 (Bogotá, Colombia); 1858, 219 (Bogotá); Cat. Am. B., 1862, 175 (Bogotá); Cat. Birds Brit. Mus., XV, 1890, 211, part (Bogotá, Medellín, and Concórdia, Colombia; "Panama," excl. syn. *T. tenuifasciatus* Lawrence).<sup>b</sup>—WYATT, Ibis, 1871, 331 (near Ocaña, Colombia, 4,000 ft. alt.).—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1879, 524 (Concordia and Medellín, Antioquía, Colombia; descr. nest and eggs).—BERLEPSCH, Journ. für Orn., 1884, 307 (Bucaramanga, Colombia).—STONE, Proc. Ac. Nat. Sci. Phila., 1899, 306 (Antioquía, Colombia; crit.).  
[*Thamnophilus*] *multistriatus* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 70.—SHARPE, Hand-list, iii, 1901, 16 (Panamá; Colombia; Ecuador).

### THAMNOPHILUS VIRGATUS VIRGATUS Lawrence.

#### TURBO ANTSHRIKE.

*Adult male*.—Head and neck, above and laterally, black, each feather with a conspicuous mesial guttate streak of buffy white; under parts, including chin and throat, dull slate-gray, similarly but more broadly streaked, as far back as the lower abdomen, where the streaks become obsolete and the ground color paler and more buffy gray; under tail-coverts cinnamon with narrow shaft-streaks of paler; thighs deeper cinnamon, or russet; under wing-coverts and broad edgings to inner webs of primaries deep cinnamon-buff; back and scapulars tawny-chestnut, changing on rump to a paler and duller, more fulvous, hue; wings and tail clear chestnut; length (skin), about 1.45; wing, 75; tail, 57; exposed culmen (tip of bill broken off); tarsus, 25; middle toe, 15.

Northwestern Colombia (Turbo), near eastern extremity of Isthmus of Panama.

This very distinct species is very unlike any other known to me. It is about the size of *T. palliatus* (Lichtenstein), and has the back, wings, and tail similar in color, but has the pileum, hindneck, and under parts conspicuously streaked with white instead of having the pileum plain black and under parts barred with white, the ground color of the under parts moreover being gray instead of black. There is a closer resemblance in coloration to *Berlepschia rikeri* (belonging

<sup>a</sup> According to Sclater, Cat. Birds Brit. Mus., xv, 1890, 211. I have seen only Colombian examples, however, and the species is omitted from the *Biologia Centrali-Americana*.

<sup>b</sup> The type of *Thamnophilus tenuifasciatus* has been carefully examined and compared with specimens of *T. multistriatus*, with the result that it proves to be very distinct from the latter. If not a synonym of *T. tenuipunctatus* Lafresnaye (which I have not seen) it must stand as a distinct form.

to the Furnariidæ), but the latter has the primaries, primary coverts, and alula sooty blackish, and under parts of the body spotted rather than streaked.

*Thamnophilus*, sp.? CASSIN, Proc. Ac. Nat. Sci. Phila., 1860, 189 (Turbo, Colombia).

*Thamnophilus virgatus* LAWRENCE, Proc. Ac. Nat. Sci. Phila., xx, 1868, 361 (Turbo, Colombia; coll. Acad. Nat. Sci. Phila.).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 199 (Turbo).

[*Thamnophilus*] *virgatus* SHARPE, Hand-list, iii, 1901, 12.

### Genus ERIONOTUS Cabanis and Heine.

*Erionotus*<sup>a</sup> CABANIS and HEINE, Mus. Hein., ii, Aug., 1859, 15. (Type, *Thamnophilus cærulescens* Vieillot.)

Medium-sized or rather small Formicariidæ (length about 140–150 mm.), with bill more compressed than in *Thamnophilus* and coloration very different, the plumage without bars, either above or below.

Bill variable in size (nearly as long to only about half as long as head), its width at frontal antiæ not greater than its height at same point and equal to less than one-half to decidedly more than one-half the distance from nostril to tip of maxilla; culmen slightly to distinctly ridged, nearly straight for most of its length, strongly decurved terminally, the tip of maxilla distinctly (sometimes strongly) uncinatè; maxillary tomium straight, slightly but distinctly notched subterminally; mandibular tomium straight, slightly but distinctly notched and toothed subterminally, the tip of the mandible forming a small but distinct recurved point; gonys moderately convex (more strongly so basally), recurved terminally. Nostril exposed (but posteriorly in contact with feathering of the latero-frontal antiæ), oval or roundish, without operculum, with the interior tubercle slightly visible in posterior portion. Rictal bristles present but minute (practically obsolete); feathers of chin, malar and frontal antiæ, and lores, with distinct terminal setæ. Wing moderate or rather large, with longest primaries decidedly longer than secondaries; fourth, fifth, and sixth, or fifth, sixth, and seventh primaries longest and equal (or the fifth slightly longer than fourth, the latter equal to sixth), the tenth (outermost) about three-fifths as long as the longest, the ninth equal to or shorter than secondaries. Tail four-fifths to more than five-sixths as long as wing, much rounded (graduation less than length of middle toe without claw), the rectrices (12) moderately broad or rather narrow, rounded terminally. Tarsus longer (sometimes much longer) than exposed culmen, one-third as long as wing or a little less, distinctly scutellate, the plantar scutella in two longitudinal

<sup>a</sup>“Von ζρον (Wolle) und νωτος (Rücken).” (Cabanis and Heine.)

series, that on outer side sometimes indistinct, especially on upper portion; middle toe, with claw, much shorter than tarsus; outer toe, without claw, reaching to or slightly beyond middle of subterminal phalanx of middle toe, the inner toe slightly shorter; hallux about as long as inner toe but much stouter; basal phalanx of middle toe wholly united to outer toe, for about half its length to inner toe; claws moderate in size and curvature, that of the hallux decidedly shorter than the digit. Plumage full, soft, and blended, that of the rump elongated and lax; feathers of crown and occiput (especially the latter) elongated, forming a more or less distinct decumbent crest of broad, rounded feathers.

*Coloration*.—Adult males with pileum, wings, and tail black, the rest of upper parts gray or gray and black, in some species wholly black, except for white concealed patch on back and white wing-spots; back with a large concealed patch of white, the wings and tail with white markings; under parts gray, sometimes whitish on abdomen, etc., sometimes entirely black; adult females brown (sometimes partly rufescent) above, with whitish markings on wings and concealed white patch on back, paler brownish or rufescent below.

*Nidification*.—Nest pensile, vireo-like; eggs white or creamy white, spotted or streaked with brownish.

*Range*.—Honduras to Cayenne and southeastern Brazil. (About twelve species.)<sup>a</sup>

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<sup>a</sup> The type of *Erionotus* (*Thamnophilus cærulescens* Vieillot), together with *Thamnophilus melanochrous* Sclater and Salvin and probably several others referable to the same group (I have not seen *T. tschudii* Pelzeln, *T. æthiops* Sclater, *T. cinereo-niger* Pelzeln, *T. stellaris* Spix, *T. tristis* Sclater and Salvin, *T. capitalis* Sclater, nor *T. cinereiceps* Pelzeln), differs so much in relative size and shape of the bill from *T. ambiguus* Swainson, *T. nævius* (Gmelin), *T. gorgonæ* Thayer and Bangs, and related forms that there is some question as to whether the two groups are really congeneric; indeed, I have placed them together mainly on account of their very close resemblance to one another in style of coloration.

Another group, composed of species (referred by Dr. Sclater to the genera *Thamnophilus* and *Dysithamnus*) distinguished by their very plain (mainly gray, slate colored or sooty) coloration, without black wings or tail and destitute of white markings on wings and tail or of a distinct white dorsal (concealed) patch, I do not, at present at least, refer to *Erionotus*. These species (*Thamnophilus murinus* Pelzeln, *T. simplex* Sclater, *T. capitalis* Sclater, *T. inornatus* Ridgway, *Dysithamnus leucostictus* Sclater, *Thamnophilus schistaceus* D'Orbigny, *Dysithamnus ardesiacus* Sclater and Salvin, *D. unicolor* Sclater, *D. plumbea* (Maximilian), and *D. subplumbeus* Sclater and Salvin) differ considerably among themselves in structural details and may represent two or more distinct groups. Since they are all extralimital to the present work, however, I leave them as a problem for others to work out.



KEY TO THE SUBSPECIES OF *ERIONOTUS PUNCTATUS*.

- a*. Smaller (wing averaging less than 71 in adult males, less than 68 in adult females); adult females with lateral under parts distinctly darker than median portion.  
*b*. Paler; adult female more olivaceous. (South America in general.)  
     *Erionotus punctatus punctatus* (extralimital).<sup>a</sup>  
*bb*. Darker; adult female more tawny or rufescent. (British Honduras to western Ecuador.) ..... *Erionotus punctatus atrinucha* (p. 49).  
*aa*. Larger (wing averaging 72.1 in adult male, 70.1 in adult female); adult female with lateral under parts not distinctly darker than median portion. (Gorgona Island, Bay of Panama.) ..... *Erionotus punctatus gorgonæ* (p. 52).

**ERIONOTUS PUNCTATUS ATRINUCHA** (Salvin and Godman).**SLATY ANTSHRIKE.**

Similar to *T. p. punctatus*,<sup>b</sup> but adult male with gray of both upper and under parts darker and adult female with general coloration darker and less rufescent (more olivaceous), especially the pileum.<sup>c</sup>

*Adult male*.—Pileum black, more or less mixed with slate-gray on forehead (the latter sometimes extensively slate-gray barred or flecked with black); hindneck mixed black and slate-gray, sometimes uniform black; back mixed black and slate-gray (the former predominating), the feathers extensively pure white basally; scapulars and rump plain slate-gray; exterior row of scapulars black, broadly edged with white; wings black, all the wing-coverts conspicuously tipped with white, tertials broadly edged with white, the other remiges narrowly edged with light gray; upper tail-coverts black, broadly tipped with white; tail black, all the rectrices tipped with a large white spot, except middle pair, which are narrowly tipped with white or else wholly black; outermost rectrix, on each side, with a quadrate spot of white crossing outer web beyond middle portion;<sup>d</sup> superciliary region, sides of head and neck, and under parts plain gray (no. 6) or slate-gray, the sides of head (often chin

<sup>a</sup> [*Lanius*] *naevius* Gmelin, Syst. Nat., i, pt. i, 1788, 308, not of p. 304.—*Tityra cayanaensis*, female! (Cayenne); Latham, Index Orn., i, 1790, 81.—*Thamnophilus naevius* (not of Vieillot, 1816) Swainson, Zool. Journ., ii, no. v, April, 1825, 90; Orn. Drawings, pl. 59; Sclater, Cat. Birds Brit. Mus., xv, 1890, 197, part.—*E[ri]onotus naevius* Cabanis and Heine, Mus. Hein., ii, 1859, 16.—*Lanius punctatus* Shaw, Gen. Zool., vii, pt. ii, 1809, 327 (based on "*Le Tachet. Levaill[ant] Ois.*" [pl. 77, fig. 1]).—(?) *Thamnophilus naevius albiventris* Taczanowski, Orn. du Pérou, ii, 1884, 9.—*T[hamnophilus] naevius naevius* Hellmayr, Abh. K. B. Akad. Wiss., ii kl., xxii Bd., iii Abt., 1905, 659 (crit.).

<sup>b</sup> See "Key," top of this page.

<sup>c</sup> This is an unsatisfactory subspecies, and I am doubtful as to its validity. Both very dark and light colored examples occur among specimens from Bogotá, and I find it extremely difficult to correlate the color differences with geographic distribution.

<sup>d</sup> The second and third pairs (counting from outside) are sometimes similarly marked.

and throat also) faintly barred or flecked with dusky, the auricular region with narrow shaft-streaks of whitish; under tail-coverts broadly tipped or terminally margined with white; maxilla brownish black, mandible grayish or brownish (bluish gray in life?); legs and feet horn color (bluish gray in life?); length (skins), 129-151 (141); wing, 66.5-74 (69.6); tail, 51.5-60 (55.1); culmen, 16.5-21 (19.7); tarsus, 19.5-22 (20.6); middle toe, 12.5-14.5 (13.2).<sup>a</sup>

*Adult female*.—General color of upper parts olive-brown, the pileum more rufescent (more russet or mars brown); interscapulars with much concealed white; upper tail-coverts dull chestnut-brown, usually tipped (more or less distinctly) with pale buffy brown or buffy; tail dark chestnut-brown, the rectrices tipped with white or buffy, the exterior pair with a quadrate spot of white or buffy on outer web beyond middle portion; wings dusky, all the wing-coverts conspicuously tipped with pale buff or buffy white, tertials broadly edged with the same, the remaining remiges edged with russet or brown (becoming paler and more buffy on outer primaries); sides of head, chin, and throat pale olive-buffy, the auricular region with narrow shaft-streaks of whitish or pale buffy; rest of under parts plain light buffy olive (sometimes approaching wood brown) the middle of abdomen paler and more yellowish or buffy, the under tail-coverts more rufescent or cinnamomeous; bill and feet as in adult male; length (skins), 132-150 (141.1); wing, 64-70.5 (67.5); tail, 50-58.5 (54.1); culmen, 18-20 (18.8); tarsus, 20-22 (20.9); middle toe, 12-14 (13.2).<sup>b</sup>

<sup>a</sup> Twenty specimens.

<sup>b</sup> Twenty-one specimens.

| Locality.                                                            | Wing. | Tail. | Culmen. | Tarsus. | Middle toe. |
|----------------------------------------------------------------------|-------|-------|---------|---------|-------------|
| MALES.                                                               |       |       |         |         |             |
| Four adult males from Honduras (3) and British Honduras (1).....     | 69.8  | 56.4  | 19.9    | 20.4    | 13.1        |
| Two adult males from Nicaragua.....                                  | 69.7  | 56.5  | 19.5    | 20.7    | 13          |
| Ten adult males from Costa Rica.....                                 | 69.2  | 54.3  | 19.3    | 20.7    | 13.2        |
| Two adult males from Panamá.....                                     | 70    | 53.2  | 19.2    | 19.7    | 12.7        |
| Two adult males from Colombia (Bogotá).....                          | 70.7  | 57    | 17      | 22      | 14.5        |
| Ten adult males ( <i>E. p. punctatus</i> ) from Colombia.....        | 71    | 54.7  | 19.2    | 21.3    | 13          |
| One adult male ( <i>E. p. punctatus</i> ) from Cayenne.....          | 69.5  | 53    | 17.5    | 22      | 14          |
| Ten adult males ( <i>E. p. punctatus</i> ) from eastern Brazil.....  | 70.9  | 52.7  | 17      | 21.4    | 12.8        |
| FEMALES.                                                             |       |       |         |         |             |
| Two adult females from Honduras.....                                 | 70    | 56    | 19.2    | 20.7    | 13.5        |
| Two adult females from Nicaragua.....                                | 68.2  | 54.5  | 18.7    | 20.2    | 12.7        |
| Ten adult females from Costa Rica.....                               | 67.1  | 53.3  | 18.7    | 20.9    | 13.6        |
| Seven adult females from Panamá.....                                 | 67.2  | 54.7  | 18.9    | 21.4    | 12.8        |
| Six adult females ( <i>E. p. punctatus</i> ) from Colombia.....      | 67.9  | 55    | 19.3    | 21.2    | 13.1        |
| Two adult females ( <i>E. p. punctatus</i> ) from Venezuela.....     | 64.5  | 51.5  | 17.5    | 21.2    | 13          |
| One adult female ( <i>E. p. punctatus</i> ) from Brazil (Bahia)..... | 69    | 58    | 18      | 24.5    | 14.5        |

*Young male*.—Pileum, hindneck, back, scapulars, and rump uniform prouts brown; under parts pale brownish gray, washed with prouts brown, the abdomen grayish white or very pale gray; wings and tail as in adult female.

*Young female*.—Not essentially different in coloration from the adult female but texture of plumage different (much softer).

British Honduras (Toledo District), Honduras (Puerto Cabello; Medina; Rio Segóvia; Chamelicón; Rio Blanco; Céiba), Nicaragua (Rio Escondido; San Emilis), Costa Rica (Angostura; Pacuare; San Bernardo; Sipúrio; Siquirres; Rio Reventazón; Jiménez; Old Harbor; Orosí; El Hogár; Cuábre; Guácimo; La Cristina), Panamá (Santiago de Veragua; Chepo; Lion Hill; Panamá; Sabana de Panamá), western and central Colombia (Rio Truando; Bucaramanga; Bonda, Cacagualito, Minca, and Don Diego, Santa Marta; Nechi, Antioquia; Oñaca; Bogotá),<sup>a</sup> and western Ecuador<sup>b</sup> (Babahoyo; Esmeraldas; Balzár Mts.; Santa Rita; Chimbo; Vines; Foreste del Rio Peripa).

*Thamnophilus nævius* (not *Lanius nævius* Gmelin) SCLATER, Proc. Zool. Soc., Lond., 1855, 148 (Bogotá); 1858, 213 (monogr.); 1860, 278 (Babahoyo, w. Ecuador), 294 (Esmeraldas, w. Ecuador; crit.); Cat. Am. Birds, 1862, 173 (Colombia; Esmeraldas, w. Ecuador); Cat. Birds Brit. Mus., xv, 1890, 197 (Puerto Cabello and Medina, Honduras; Angostura, Costa Rica; Veragua, Chepo, and Panamá, Panamá; Minca and Nechi, Colombia; Esmeraldas, Balzár Mts., Santa Rita, and Chimbo, w. Ecuador).—CASSIN, Proc. Ac. Nat. Sci., Philad., 1860, 188 (Rio Truando, Colombia).—SCLATER and SALVIN, Proc. Zool. Soc., Lond., 1864, 355 (Lion Hill, Panamá; crit.); 1879, 524, Nechi, Antioquia, Colombia).—SALVIN, Proc. Zool. Soc., Lond., 1867, 144 (Santiago de Veragua, Panamá).—LAWRENCE, Ann. Lyc., N. Y., ix, 1868, 107 (Angostura and Pacuare, Costa Rica).—FRANTZIUS, Journ. für Orn., 1869, 305 (Costa Rica).—BOUCARD, Proc. Zool. Soc., Lond., 1878, 60 (San Carlos, Costa Rica).—SALVIN and GODMAN, Ibis, 1880, 171 (Minca, Santa Marta, Colombia, 2,000 ft.).—BERLEPSCH and TACZANOWSKI, Proc. Zool. Soc., Lond., 1883, 564 (Chimbo, w. Ecuador; crit.).—BERLEPSCH, Journ. für Orn., 1884, 307 (Bucaramanga, Colombia; crit.); Zeitschr. Orn., 1887, 185 (Bogotá).—RIDGWAY, Proc. U. S. Nat. Mus., x, 1887, 590 (Segóvia R., Honduras).—ZELEDÓN, Anal. Mus. Nac., Costa Rica, 1887, 114 (Angostura, Costa Rica).—BANGS, Proc. Biol. Soc., Wash., xii, 1898, 138 (Santa Marta, Colombia); Proc. New Engl. Zool. Club, ii, 1900, 24 (Loma del León, Panamá); Bull. Mus. Comp. Zool., xxxix, 1903, 150 (Céiba, Honduras).—ALLEN, Bull. Am. Mus., N. H., xiii, 1900, 161 (Bonda, Santa Marta, Colombia).

(?) *Thamnophilus cærulescens* (not of Vieillot) LAFRESNAYE, Rev. Zool., 1853, 338.

*Thamnophilus amazonicus* (not of Sclater) LAWRENCE, Ann. Lyc. N. Y., vii, 1862, 325 (Lion Hill, Panamá).

[*Thamnophilus*] *nævius* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 70, part.

*Thamnophilus atrinucha* SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, sig. 25, Feb., 1892, 200 (Panamá; coll. Salvin and Godman).—RICHMOND, Proc. U. S. Nat. Mus., xvi, 1893, 500 (Rio Escondido, Nicaragua; habits).—SALVADORI

<sup>a</sup>Specimens of both this form and what I am not able to distinguish from true *E. punctatus* occur in Bogotá collections.

<sup>b</sup>I have not seen a specimen from western Ecuador.



and FESTA, Boll. Mus. Zool., etc., xv, no. 362, 1899, 27 (Vinces and Foreste del Rio Peripa, w. Ecuador); no. 399, 7 (Laguna del Pita, Panamá).—THAYER and BANGS, Bull. Mus. Comp. Zool., xlvi, 1906, 216 (Sabana de Panamá).

[*Thamnophilus*] *atrinucha* SHARPE, Hand-list, iii, 1901, 14.

[*Thamnophilus*] *nævius atrinucha* HELLMAYR, Abh. K. B. Akad. Wiss., ii. Kl., xxii Bd., iii. Abth., 1905, 659 (crit.).

*Thamnophilus nævius atrinucha* CARRIKER, Ann. Carnegie Mus., vi, 1910, 602 (Caribbean lowlands and foothills, Costa Rica; crit.; habits; descr. nest and eggs).

### ERIONOTUS PUNCTATUS GORGONÆ (Thayer and Bangs).

#### GORGONA ISLAND ANTSHRIKE.

Similar to *E. p. atrinucha* but adult male with forehead more extensively grayish,<sup>a</sup> the adult female with lateral under parts paler (nearly concolor with median portion).

Gorgona Island, Bay of Panamá.

*Adult male*.—Length (skins), 143–148 (146); wing, 70–75 (72.1); tail, 57–61 (59); culmen, 18.5–20 (19.4); tarsus, 20–21 (20.5); middle toe, 12.5–13 (12.7).<sup>b</sup>

*Adult female*.—Length (skins), 140–148 (144); wing, 68.5–72.5 (70.1); tail, 54.5–57.5 (56.1); culmen, 18.5–20 (19.1); tarsus, 21–21.5 (21.1); middle toe, 13–14 (13.4).<sup>b</sup>

*Thamnophilus gorgonæ* THAYER and BANGS, Bull. Mus. Comp. Zool., xlvi, no. 5, June, 1905, 95 (Gorgona Island, Bay of Panamá; coll. E. A. and O. Bangs).

#### Genus DYSITHAMNUS Cabanis.

*Dysithamnus*<sup>c</sup> CABANIS, in Wiegmann's Archiv für Naturg., xiii, pt. i, 1847, 223. (Type, *Lanius guttulatus* Lichtenstein.)

*Dasythamnus* (emendation) BURMEISTER, Syst. Ueb. Th. Bras., iii, 1856, 82.

*Silvestrius*<sup>d</sup> BERTONI, Aves Nuevas del Paraguay, 1901, 136. (Type, *Thamnophilus* (*Silvestrius*) *flavescens* Bertoni = *Myiothera mentalis* Temminck.)

Small Formicariidæ (length about 100–115 mm.) with bill much shorter than head, tail less than three-fourths as long as wing and slightly rounded, tarsus one-third as long as wing, and plainly colored plumage (olive or olive-greenish above, becoming gray or slate colored on head and neck, the pileum sometimes streaked or spotted with blackish, mostly whitish or yellowish below, sometimes with streaks on throat and chest, females more brownish, with pileum rufescent.

Bill much shorter than head, its width at frontal antiæ slightly greater than its depth at same point and equal to about half the distance from nostril to tip of maxilla; culmen distinctly but not sharply ridged, nearly straight for most of its length, strongly and rather abruptly decurved terminally, the tip of maxilla moderately

<sup>a</sup> On comparison with a large series of *E. p. atrinucha* I find that most of the characters mentioned by Mr. Bangs do not hold.

<sup>b</sup> Four specimens.

<sup>c</sup> δύω, hineinbegeben; θάμνος, Gebüsch. (Cabanis.)

<sup>d</sup> Named for Dr. Felipe Silvestri.

to rather strongly uncinatè; maxillary tomium straight, distinctly notched subterminally; mandibular tomium nearly straight, minutely toothed and notched subterminally, the tip of mandible forming a short recurved point; gonys gently convex, slightly ascending terminally, not prominent basally. Nostril exposed, posteriorly in contact with feathering of latero-frontal antiæ, roundish or broadly oval, its upper-posterior margin membranous, the interior tubercle visible within posterior portion. Rictal bristles present but minute, the feathers of chin, anterior portion of malar region, and lores with long terminal setæ. Wing moderate, with longest primaries extending to decidedly beyond secondaries; sixth and seventh, or fourth, fifth and second, primaries longest, the tenth (outermost) less than three-fifths but more than half as long as the longest, the ninth about equal to or slightly shorter than secondaries. Tail a little more than half to more than two-thirds as long as wing, slightly rounded or nearly even, the rectrices (12) narrow, subrounded or subacuminate terminally. Tarsus much longer than exposed culmen, about one-third as long as wing, slender, the acrotarsium distinctly scutellate, the plantar scutella in two longitudinal series, less distinct on outer side; middle toe, with claw, much shorter than tarsus; outer toe, without claw, reaching to slightly beyond middle of subterminal phalanx of middle toe, the inner toe a little shorter; hallux about as long as inner toe, but much stouter; basal phalanx of middle toe wholly united to outer toe, for about half its length to inner toe; claws moderate in size and curvature, that of the hallux decidedly shorter than the digit. Plumage full, soft, and blended, longer and more lax on rump; pileum not crested.

*Coloration*.—Adult males olive or olive-greenish above, the head and neck gray or slate-colored (sometimes streaked or spotted with blackish), the lesser wing-coverts black, spotted with white or with a white area on inner-anterior portion; under parts mostly whitish or yellowish (at least medially), the throat and chest sometimes streaked with gray or blackish. Adult females duller in color, with pileum rufescent.

*Range*.—Guatemala to British Guiana, southeastern Brazil, Paraguay, Bolivia, and Peru. (About ten species.)<sup>a</sup>

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<sup>a</sup> I have not seen *D. guttulatus* (Lichtenstein), *D. tambillanus* Taczanowski, *D. xanthopterus* Burmeister, nor *D. flemingi* Hartert. All these except *D. xanthopterus* appear, however, to be congeneric with *D. mentalis*, etc., so far as I am able to judge from descriptions; but the style of coloration is so different in *D. xanthopterus* (chestnut-rufous wings and lower back, white spots on sides of head, etc.) that I doubt its close relationship.

*D. leucostictus* Sclater, *D. schistaceus* (D'Orbigny), *D. ardesiacus* Sclater and Salvin, *D. unicolor* Sclater, and *D. subplumbeus* Sclater and Salvin, I unhesitatingly exclude, as being much more nearly related to the genus *Erionotus* Cabanis and Heine (= *Thamnophilus*, part, of Sclater).

*D. plumbeus* (Maximilian) I have seen but have not now at hand, and therefore can not verify my impression that it is congeneric with *D. mentalis* and allies.

KEY TO THE SPECIES AND SUBSPECIES OF *DYSITHAMNUS*.

- a. Pileum and hindneck at least partly slate color or slate-gray. (*Adult males*.)
- b. Pileum and hindneck without black or white markings.
  - c. A narrow white spot or streak on lower edge of auricular region. (Southwestern Brazil; Bolivia?).....*Dysithamnus affinis*, adult male (extralimital).<sup>a</sup>
  - cc. No trace of white spot or streak on lower edge of auricular region. (*Dysithamnus mentalis*.)
  - d. Under parts of body more deeply yellowish, strongly and abruptly contrasted with grayish white of throat. (Southeastern Brazil; Paraguay.)  
*Dysithamnus mentalis mentalis*, adult male (extralimital).<sup>b</sup>
  - dd. Under parts of body paler yellowish (sometimes white).
  - e. Abdomen more or less yellowish; back more or less olivaceous, different from color of pileum and hindneck.
  - f. Larger (wing 63.5–66.5).
  - g. Paler. (Tobago.)  
*Dysithamnus mentalis oberi*, adult male (extralimital).<sup>c</sup>
  - gg. Darker. (Colombia and Venezuela.)  
*Dysithamnus mentalis semicinereus*, adult male (extralimital).<sup>d</sup>
  - ff. Smaller (wing 57–62). (Panamá to Guatemala.)  
*Dysithamnus mentalis septentrionalis*, adult male (p. 55).
  - ee. Abdomen white; back slate color, concolor with pileum and hindneck.
  - f. Lighter and clearer slate color above, more extensively white beneath, the flanks paler and less olive or buffy brownish. (Trinidad.)  
*Dysithamnus mentalis andrei*, adult male (extralimital).<sup>e</sup>

<sup>a</sup> *Dysithamnus affinis* Pelzeln, Orn. Bras., ii, Abth., 1869, 80, 149 (Villa Maria, Brazil; coll. Vienna Mus.).—*D[ysithamnus] a[ffinis] affinis* Hellmayr, Novit. Zool., xiii, Feb., 1906, 32, in text (crit.); *Dysithamnus affinis affinis* Hellmayr, Novit. Zool., xv, 1908, 69 (Faz. Esperanza, Brazil; crit.).—*Dysithamnus olivaceus* (not *Thamnophilus olivaceus* Tschudi) Sclater, Cat. Birds Brit. Mus., xv, 1890, 222, excl. syn. part.—*Dysithamnus mentalis* (not *Myiothera mentalis* Temminck) Allen, Bull. Am. Mus. N. H., v, 1893, 118, excl. syn. (Chapada, Matto-Grosso, Brazil; crit.).

<sup>b</sup> *Myiothera mentalis* Temminck, Pl. Col., ii, livr. 30, Jan., 1823, text to pl. 179, fig. 3 (Brazil; coll. Vienna Mus.).—*Daysthamnus mentalis* Burmeister, Syst. Ueb. Th. Bras., iii, 1856, 82.—*Dysithamnus mentaüs* Sclater, Proc. Zool. Soc. Lond., 1858, 221, part; Cat. Birds Brit. Mus., xv, 1890, 221; Allen, Bull. Am. Mus. N. H., ii, 1889, 250.—*D[ysithamnus] mentalis mentalis* Hellmayr, Novit. Zool., xiii, Feb., 1906, 32, in text (crit.).—*M[yiothera] poliocephala* Maximilian, Beitr. Naturg. Bras., iii, pt. ii, 1831, 1098 (s. e. Brazil; type now in coll. Am. Mus. Nat. Hist.).

<sup>c</sup> *Dysithamnus mentalis oberi* Ridgway, Proc. Biol. Soc. Wash., xxi, Oct. 20, 1908, 193 (Tobago; coll. U. S. Nat. Mus.).

<sup>d</sup> *Dysithamnus semicinereus* Sclater, Proc. Zool. Soc. Lond., 1855, 90, 147, pl. 97 (Bogotá, Colombia; coll. P. L. Sclater); Cat. Birds Brit. Mus., xv, 1890, 221, part.—*D[ysithamnus] mentalis semicinereus* Ridgway, Proc. Biol. Soc. Wash., xxi, Oct. 20, 1908, 193, in text.

<sup>e</sup> *Dysithamnus affinis andrei* Hellmayr, Novit. Zool., xiii, Feb., 1906, 31 (Caparo, Trinidad; coll. Tring Mus.).—*Dysithamnus mentalis spodionotus* (not *D. spodionotus* Salvin and Godman) Chapman, Bull. Am. Mus., N. H., vi, 1894, 50 (Trinidad).



*ff.* Darker and duller slate color above, less extensively white beneath, the flanks darker and more buffy brownish. (British Guiana.)

*Dysithamnus mentalis spodionotus*, adult male (extralimital).<sup>a</sup>

*bb.* Pileum and hindneck streaked or spotted with black (sometimes also spotted with white).

*c.* Pileum with small rounded spots of white; throat and foreneck more narrowly streaked; tail 34-38. (Costa Rica and western Panamá.)

*Dysithamnus puncticeps*, adult male (p. 58).

*cc.* Pileum without white spots; throat and foreneck more broadly streaked; tail 30-35. (Costa Rica.).....*Dysithamnus striaticeps*, adult male (p. 59).

*aa.* Pileum and hindneck rufescent brown, cinnamomeous, or tawny, very different from olive or olive-brown of back.

*b.* Pileum, throat, and chest without streaks; wing-coverts much less distinctly tipped with buff.

*c.* Under parts strongly buffy, the abdomen white or pale buffy (never yellow); pileum and hindneck more strongly and more extensively rufescent, the back, etc., lighter and more buffy olive.

*Dysithamnus affinis*, adult female (extralimital).

*cc.* Under parts olivaceous (not buffy) laterally and on chest, the abdomen pale yellowish or whitish. (*Dysithamnus mentalis*).<sup>b</sup>

*d.* Sides and chest much darker olivaceous.

*Dysithamnus mentalis semicinereus*, adult female (extralimital).

*dd.* Sides and chest much paler olivaceous.

*e.* Abdomen pale olive-yellowish.

*Dysithamnus mentalis septentrionalis*, adult female (p. 56).

*ee.* Abdomen white.....*Dysithamnus mentalis andrei*, adult female (extralimital).

*bb.* Pileum, throat, and chest streaked with dusky; wing-coverts much more distinctly tipped with buffy.

*c.* Tail 36.5-40; under parts more strongly buffy, with chest, etc., more narrowly streaked; pileum paler tawny or cinnamomeous, more distinctly streaked with dusky.....*Dysithamnus puncticeps*, adult female (p. 58).

*cc.* Tail 29-35.5; under parts less strongly buffy (whitish medially), with chest more heavily streaked; pileum darker tawny, less distinctly streaked with dusky.....*Dysithamnus striaticeps*, adult female (p. 60).

## DYSITHAMNUS MENTALIS SEPTENTRIONALIS Ridgway.

### NORTHERN ANTIVIREO.

Similar to *D. m. semicinereus*<sup>c</sup> but decidedly smaller; adult male lighter in color of upper parts, adult female with sides and flanks paler olive.

<sup>a</sup> *Dysithamnus spodionotus* Salvin and Godman, Ibis, 5th ser., ii, April, 1883, 211 (Roraima, Brit. Guiana; coll. Salvin and Godman).—*D[ysithamnus] a[ffinis] spodionotus* Hellmayr, Novit. Zool., xiii, Feb., 1906, 32.

<sup>b</sup> Adult females of *D. m. mentalis* and *D. m. spodionotus* not seen by me.

<sup>c</sup> See page 54.

*Adult male*.—Pileum and hindneck plain slate color, becoming paler (slate-gray) on supra-auricular region; back, scapulars, rump, and upper tail-coverts plain olivaceous-slate color (more decidedly olivaceous posteriorly) contrasting more or less strongly with slate color of hindneck and pileum; tail darker slaty olive or olivaceous-slate, the outermost rectrices usually narrowly tipped with whitish; auricular region slate color (usually somewhat darker than pileum), sometimes with very narrow shaft-streaks of whitish; lores and sub-orbital region slate-grayish indistinctly mottled or flecked with paler, the latter and posterior portion of the former sometimes uniform dark slate color; malar region pale gray or grayish white, indistinctly barred or transversely flecked with darker; outer web of exterior row of scapulars broadly edged with white, the white usually margined internally by a narrow line of dusky; lesser wing-coverts black, at least some of the feathers tipped, more or less distinctly, with white, the inner-anterior portion of the area occupied by a white patch; middle coverts black distinctly tipped with white; greater coverts slate color or slate-gray narrowly tipped with white; remiges similar in color to back, etc., the terminal portion of longer primaries more brownish; chin and throat white or grayish white; chest pale gray medially, darker (slate-gray) laterally, passing into light olive on flanks; breast (medially) white or yellowish white, passing into pale yellow (primrose to nearly straw yellow) on abdomen and under tail-coverts; under wing-coverts mostly pale yellow, the inner webs of remiges broadly edged with the same; maxilla dusky, paler on tomium; mandible paler (plumbeous in life); iris brown; legs and feet dusky (plumbeous in life); length (skins), 101-113 (108.5); wing, 57-63 (59.4); tail, 37.5-41.5 (39.1); culmen, 14-15.5 (14.6); tarsus, 18-20 (19.2); middle toe, 11-12 (11.4).<sup>a</sup>

*Immature male*.—Similar to the adult male but remiges distinctly more brownish (nearly broccoli brown to light olive-brown), and breast yellowish, like abdomen.

*Adult female*.—Pileum chestnut-brown or russet, the feathers with indistinct shaft-streaks of paler; hindneck similar but less rufescent brown; back, scapulars, and rump plain olive (varying from grayish to brownish olive); upper tail-coverts and tail sepia brown; general color of wings olive, the middle and greater coverts narrowly and rather indistinctly tipped with buffy or pale buffy brownish; a narrow orbital ring of whitish; auricular region dusky olive or slaty olive, with narrow shaft-streaks of whitish or pale buffy; malar region, chin, and throat white, usually more or less tinged with pale yellowish olive or dull yellowish; rest of under parts pale yellowish, passing into light olive or buffy olive on sides and flanks, the under tail-coverts buffy; bill, etc., as in adult male; length (skins), 96-112

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<sup>a</sup> Fifteen specimens.

(106); wing, 54.5-62.5 (59.2); tail, 36-40.5 (38.6); culmen, 14.5-15.5 (14.9); tarsus, 18.5-20 (19.3); middle toe, 10.5-11.5 (11.1).<sup>a</sup>

Guatemala (Choctúm; Chisé; sources of Rio de la Pasión), Costa Rica (Dota; Naranjo de Cartago; Grécia; Guaitíl; Juan Viñas; Las Mesas; El General; Buena Vista; Rio Platanár; Guayabo; Cariblanco de Sarapiquí; Navarro; Rio Huacúm; Laguária; Santa Maria de Dota), and Panamá (Panamá; Calovévora, Chitra, Calobre; and Santa Fe de Verágua; Boquete; Volcán de Chiriquí, and along Pacific coast to western Ecuador (Chimbo)? (See Berlepsch and Taczanowski, Proc. Zool. Soc. Lond., 1883, 564.)

*Dysithamnus semicinctus* (not of Sclater, 1855) SCLATER, Proc. Zool. Soc. Lond., 1858, 222, part (monogr.); Cat. Birds Brit. Mus., xv, 1890, 221, part (Chisé, sources of Rio de la Pasión, and Choctúm, Guatemala; Costa Rica; Santa Fé de Verágua, Calovévora, and Panamá, Panamá).—SALVIN and SCLATER, Ibis, 1860, 399 (Choctúm, Guatemala; crit.).—SALVIN, Proc. Zool. Soc. Lond., 1867, 144 (Santa Fé de Verágua); Proc. Zool. Soc. Lond., 1870, 194 (Calovévora, Chitra, Calobre, and Volcan de Chiriquí, Panama).—LAWRENCE, Ann. Lyc. N. Y., ix, 1868, 107 (Turrialba, Dota, Grécia, and Guaitíl, Costa Rica).—FRANTZIUS, Journ. für Orn., 1869, 305 (Costa Rica).—BOUCARD, Proc. Zool. Soc. Lond., 1878, 60 (Naranjo de Cartago, Costa Rica); Liste Ois. récol. Guat., 1878, 38.—ZELEDÓN, Anal. Mus. Nac. Costa Rica, i, 1887, 114 (Cartago, Turrialba, and Dota, Costa Rica).—BANGS, Proc. New Engl. Zool. Club, iii, 1902, 41 (Boquete, Panamá, 4000-5000 ft.).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 206, part (excl. South American references and localities).

[*Dysithamnus*] *semicinctus* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 70, part.—SHARPE, Hand-list, iii, 1901, 18, part.

*Disithamnus semicinctus* CHERRIE, Expl. Zool. Merid. Costa Rica, 1893, 41 (Rio Huacúm, s. w. Costa Rica).

<sup>a</sup> Fifteen specimens.

| Locality.                                                             | Wing. | Tail. | Culmen. | Tarsus. | Middle toe. |
|-----------------------------------------------------------------------|-------|-------|---------|---------|-------------|
| MALES.                                                                |       |       |         |         |             |
| Three adult males from Guatemala.....                                 | 58.5  | 37.8  | 14.8    | 18.7    | 11.2        |
| Ten adult males from Costa Rica.....                                  | 60.6  | 39.4  | 14.6    | 19.5    | 11.4        |
| Two adult males from Panamá (Chiriquí and Verágua).....               | 59.2  | 39.5  | 14.2    | 18.5    | 11.2        |
| Four adult males ( <i>D. m. semicinctus</i> ) from Colombia.....      | 65.4  | 42.4  | 15      | 19.7    | 11.7        |
| One adult male ( <i>D. m. semicinctus</i> ) from Venezuela.....       | 64    | 41    | 14.5    | 18.5    | 11.5        |
| Five adult males ( <i>D. m. andrei</i> ) from Trinidad.....           | 61    | 41    | 15      | 19      | 11.3        |
| One adult male ( <i>D. m. oberi</i> ) from Tobago.....                | 64.5  | 44    | 15      | 20      | 11.5        |
| One adult male ( <i>D. m. spodiopnotus</i> ) from British Guiana..... | 62.5  | 44.5  | 13.5    | 20.5    | 12.5        |
| Two adult males ( <i>D. m. mentalis</i> ) from southern Brazil.....   | 58.2  | 43.3  | 13      | 19      | 11          |
| Ten adult males of <i>D. affinis</i> from southwestern Brazil.....    | 62.4  | 40.7  | 14.9    | 19.8    | 12.1        |
| FEMALES.                                                              |       |       |         |         |             |
| Three adult females from Guatemala.....                               | 56.3  | 36.8  | 14.7    | 18.5    | 10.8        |
| Ten adult females from Costa Rica.....                                | 60.1  | 39.1  | 15      | 19.6    | 11.1        |
| Two adult females from western Panamá (Verágua and Chiriquí).....     | 59.2  | 38.7  | 14.5    | 19      | 11.2        |
| Five adult females ( <i>D. m. semicinctus</i> ) from Colombia.....    | 61.2  | 39.5  | 14.9    | 19.9    | 11.4        |
| One adult female ( <i>D. m. andrei</i> ) from Trinidad.....           | 59    | 35.5  | 16      | 18      | 11.5        |
| Six adult females of <i>D. affinis</i> from southwestern Brazil.....  | 61.2  | 40.6  | 14.7    | 19.5    | 11.6        |



*D[ysithamnus] olivaceus semicinerus*. OBERHOLSER, Proc. U. S. Nat. Mus., xxv, no. 1281, Sept. 8, 1902, 129, in text (part).

*Dysithamnus mentalis septentrionalis* RIDGWAY, Proc. Biol. Soc. Wash., xxi, Oct. 20, 1908, 193 (Choctum, Vera Paz, Guatemala; coll. U. S. Nat. Mus.).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 606 (Caribbean slope, 2000–4000 ft., and foothills of s. w. Pacific slope, Costa Rica; habits).—FERRY, Pub. 146, Field Mus. N. H., orn. ser., i, no. 6, 1910, 271 (Guayabo, Costa Rica).

### DYSITHAMNUS PUNCTICEPS Salvin.

#### SPOTTED-CROWNED ANTIVIREO.

*Adult male*.—Pileum and hindneck black and slate-gray, dotted with white, the black in the form of irregular (“herring-bone”) mesial streaks, broader on occiput and hindneck, the white dots more transverse on forehead; back, scapulars, rump, and upper tail-coverts slate color or deep slate-gray, usually tinged, more or less, with olive, especially on rump and upper tail-coverts; tail olive-slate or slaty olive; general color of wings similar to that of back, but concealed portion of feathers more dusky, the lesser coverts dotted with white, middle and greater coverts tipped, or terminally spotted, with white (forming two distinct narrow bands), primary coverts (usually at least) minutely marked at tip with white, and alula conspicuously edged with white; auricular region slate-gray, tinged with olive and indistinctly streaked with whitish, the suborbital and malar regions white, or yellowish white, streaked and barred with dusky grayish; sides of neck and sides of chest plain slate-gray, passing posteriorly into a more buffy olive hue on flanks; median under parts (broadly) white, passing into pale buffy yellowish posteriorly, the chest (sometimes lower throat also) usually more or less streaked with dusky; under wing-coverts and broad edgings to inner webs of remiges yellowish white, the carpo-metacarpal region spotted with dusky; maxilla brownish black, mandible dull whitish (pale bluish gray in life?); legs and feet horn color (bluish gray in life?); length (skins), 108–113 (110); wing, 58–61 (59); tail, 34–38 (36); tarsus, 20–20.5 (20.2); middle toe, 11–12 (11.5).<sup>a</sup>

*Adult female*.—Pileum light tawny-ochraceous, buffy cinnamon or wood brown, streaked, more or less broadly, with black, the streaks more or less cuneate or guttate and broader on occiput; back, scapulars, and rump plain light grayish olive or hair brown, the upper tail-coverts more brownish; tail dusky grayish brown with light olive-brown edgings, the lateral rectrices narrowly margined at tip with pale brownish buffy; anterior lesser wing-coverts concolor with back, but slightly darker centrally, the posterior ones and the middle coverts more dusky with a rather large terminal roundish spot of pale buffy; greater coverts dark brownish olive, edged with paler, the outer web with a roundish terminal spot of buffy; remiges olive-brown (more buffy on edges of primaries), their inner webs dusky

<sup>a</sup> Two specimens.

grayish brown; supra-auricular region streaked or spotted with black and pale buff or buffy whitish; under parts buff, paler on throat and abdomen, more grayish or olivaceous on sides and flanks, the chest and throat (especially the former) narrowly streaked with black; bill, etc., as in adult male; length (skins), 103–107 (105); wing, 56.5–59 (57.7); tail, 36.5–40 (38.2); culmen, 15–17 (16); tarsus, 20–20.5 (20.2); middle toe, 12.5–13 (12.7).<sup>a</sup>

Costa Rica (San José; Pacuare; Rio Sicsola) and western Panamá (Santiago de Verágua).

*Dysithamnus puncticeps* SALVIN, Proc. Zool. Soc. Lond., 1866, 72 (Santiago de Verágua, Panamá; coll. Salvin and Godman); 1867, 144 (Santiago de Verágua).—ZELEDÓN, Anal. Mus. Nac. Costa Rica, 1887, 115 (Pacuare, Costa Rica).—SCLATER, Cat. Birds Brit. Mus., xv, 1890, 223 (Verágua).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 207, pl. 50, figs. 2, 3.—CARRIKER, Ann. Carnegie Mus., vi, 1910, 599 (in key; considered extralimital to Costa Rica?).

[*Dysithamnus*] *puncticeps* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 71.—SHARPE, Hand-list, iii, 1901, 19.

#### DYSITHAMNUS STRIATICEPS Lawrence.

##### STREAKED-CROWNED ANTIVIREO.

*Adult male*.—Pileum and hindneck slate-gray, broadly streaked with black, the streaks becoming obsolete on hindneck; back, scapulars, rump, and upper tail-coverts plain olive or grayish olive, the upper back sometimes inclining to slate-gray; tail russet-olive or olive-brown; lesser wing-coverts black, spotted with white, those along edge of wing mostly or wholly white; middle coverts black, tipped with a roundish spot of white or brownish white; greater coverts olive (darker on concealed portions), their outer webs tipped with brownish white (forming a narrow band across closed wing); remiges olive, with underlying portion dusky, paler on edge of primaries; alula black, the outermost feathers broadly edged with white; auricular region and sides of neck slate-gray, the former very indistinctly flecked with dusky; suborbital and malar regions paler gray, barred or flecked with dusky; chin, throat, and chest white, broadly streaked with slate-gray and with narrow blackish shaft-streaks; sides and flanks olive, more or less strongly suffused with buff; breast and abdomen white, or buffy white, passing into buff (more or less deep) on under tail-coverts; under wing-coverts mostly dull white; inner webs of remiges broadly edged with white; maxilla brownish black, mandible dull whitish (pale bluish gray, bluish horn color, or straw yellow in life);<sup>b</sup> iris brown, gray, grayish white, or bluish white;<sup>b</sup> legs and feet dusky or horn color (bluish gray or grayish blue in life);<sup>b</sup> length (skins), 94–112 (102); wing, 56.5–61 (59.2); tail, 31.5–35 (32.7); culmen, 15.5–17 (16.1); tarsus, 19–20.5 (19.8); middle toe, 11–12.5 (11.8).<sup>c</sup>

<sup>a</sup> Two specimens.

<sup>b</sup> M. A. Carriker, jr., on labels.

<sup>c</sup> Ten specimens.

*Adult female*.—Pileum pale cinnamon to russet, more or less distinctly streaked with dusky; back, scapulars, rump, and upper tail coverts plain olive; tail brownish olive or olive-brown; general color of wings olive (paler on edges of primaries), the lesser and middle wing-coverts darker (sometimes blackish), each with a terminal spot of buff, the greater coverts with a buffy spot on tip of outer web; auricular region olive or buffy grayish, very narrowly streaked with whitish or buffy; suborbital and malar regions pale buffy, barred or flecked with dusky; chin and throat dull buffy whitish, usually with more or less distinct narrow streaks of dusky; rest of under parts buff (more or less deep) medially, this passing into olive on sides and flanks, the chest sometimes streaked with dusky; under wing-coverts mostly pale buff or dull buffy whitish, the inner webs of remiges broadly edged with the same; maxilla dusky brown, mandible dull whitish (in dried skins); legs and feet horn color (in dried skins); length (skins), 97–112 (103); wing, 56–60.5 (58.2); tail, 29–35.5 (32.2); culmen, 14.5–16.5 (15.4); tarsus, 18–21 (19.6); middle toe, 11–12.5 (11.9).<sup>a</sup>

*Immature male*.—Similar to the adult female but grayer above and more whitish beneath.

Costa Rica (Angostura; Talamanca; San Carlos; La Balsa; Dos Novillos; Siquirres; Guácimo; Guápiles; El Hogár; Carillo; La Christina; Rio Reventazón; Rio Sicsola; Miravalles; La Vijagua).

*Dysithamnus striaticeps* LAWRENCE, Ann. Lyc. Nat. Hist. N. Y., viii, May, 1867, 130 (Angostura, Costa Rica; coll. U. S. Nat. Mus.); ix, 1868, 107 (do.).—FRANTZIUS, Journ. für Orn., 1869, 305 (Costa Rica).—BOUCARD, Proc. Zool. Soc. Lond., 1878, 60 (San Carlos, Costa Rica).—ZELEDÓN, Anal. Mus. Nac. Costa Rica, 1887, 115 (Angostura, Costa Rica).—SCLATER, Cat. Birds Brit. Mus., xv, 1890, 223 ("Valza," i. e., La Balsa, Costa Rica).—SALVIN and GODMAN, Biol. Centr.-Am., ii, 1892, 208.—UNDERWOOD, Ibis, 1896, 440 (Volcan de Miravalles, Costa Rica).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 606 (Caribbean foothills, 800–1,500 ft., Costa Rica; habits; descr. nest and eggs).

[*Dysithamnus*] *striaticeps* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 70.—SHARPE, Hand-list, iii, 1901, 19.

#### Genus MYRMOTHERULA Sclater.

*Myrmotherula* SCLATER, Proc. Zool. Soc. Lond., 1858, 234. (Type, *Muscicapa pygmaea* Gmelin.)

*Myrmotherium* (emendation) CABANIS and HEINE, Mus. Hein., ii, July, 1859, 12, footnote.

Very small Formicariidae (length less than 100 mm.) with bill slender, nearly as long as head, tail less than two-thirds (sometimes less than half) as long as wing, and plumage either conspicuously streaked or else mostly uniform gray or slate color.

Bill slender, depressed, nearly as long as head, its width at frontal antæ very much greater than its depth at same point, and equal to about half the distance from nostril to tip of maxilla or less; culmen

<sup>a</sup>Ten specimens.



distinctly but not sharply ridged, straight for about basal half then more and more decurved terminally, the tip of maxilla minutely but distinctly uncinatè; maxillary tomium slightly but decidedly concave, minutely but distinctly notched subterminally; mandibular tomium nearly straight, minutely notched subterminally; gonys nearly straight terminally, gently convex basally. Nostril exposed, widely separated from feathering of frontal antiae (the intervening space occupied by membrane), broadly (longitudinally) oval, the internal tubercle visible within the posterior half. Rictal bristles present but minute. Wing moderate, with longest primaries extending decidedly beyond secondaries; sixth and seventh, fifth, sixth, and seventh, or sixth, seventh, and eighth, primaries longest, the tenth (outermost) more than half to about three-fifths as long as the longest, the ninth shorter than secondaries. Tail decidedly less than half as long as wing (*M. pygmæa*) to slightly more than half as long, very slightly to decidedly rounded, the rectrices (10 in *M. pygmæa* and *M. cinereiventris*?<sup>a</sup> 12 in *M. surinamensis* and *M. assimilis*) rather narrow, rounded terminally. Tarsus much longer than exposed culmen, much shorter than tail and about one-third as long as wing in *M. surinamensis*, very much shorter than tail and decidedly less than one-third as long as wing in *M. cinereiventris* and *M. assimilis*, nearly as long as tail and much more than one-third as long as wing in *M. pygmæa*, distinctly scutellate, the plantar scutella in two longitudinal series; middle toe, with claw, much shorter than tarsus; outer toe, without claw, reaching to beyond middle of subterminal phalanx of middle toe, the inner toe decidedly shorter; hallux about as long as inner toe but much stouter; basal phalanx of middle toe wholly united to outer toe, for about half its length to inner toe; claws moderate in size and curvature, that of the hallux much shorter than the digit. Plumage soft and full, that of the rump much developed and fluffy; pileum not crested.

*Coloration*.—Adult males black above, conspicuously streaked with white, the wing with two broad white bands, or else plain gray or slate color above, with small white tips to wing-coverts, the tail with white terminal spots; the under parts white streaked with black (*M. surinamensis*) or immaculate pale yellow (*M. pygmæa*), or plain gray or slate color (*M. cinereiventris* and *M. assimilis*); adult females with head and neck tawny or cinnamonaceous, streaked with black above, otherwise much like adult males, or else with under parts cinnamonaceous.<sup>b</sup>

*Nidification*.—Nest made of fine roots and grass and suspended in a fork; eggs white or greenish-white.

<sup>a</sup> According to Dr. Schlater *M. pygmæa* has only 10 rectrices, and a specimen of *M. cinereiventris* apparently has only 10.

<sup>b</sup> I have not seen females of *M. cinereiventris* nor of *M. assimilis*.

*Range*.—Isthmus of Panamá to Cayenne and Amazon Valley. (At least four species.)<sup>a</sup>

KEY TO THE SPECIES OF MYRMOTHERULA.

- a. Under parts white, streaked with black. (Panamá to Guiana and western Ecuador.)  
*Myrmotherula surinamensis*, adult male (p. 62).
- aa. Under parts neither white nor streaked with black.
  - b. Under parts buffy, deepening into tawny on chest.  
*Myrmotherula surinamensis*, adult female (p. 62).
  - bb. Under parts of body pale straw or primrose yellow.
    - c. Pileum narrowly streaked with pale yellow or yellowish white; throat white.  
 (Panamá to Cayenne and Peru). *Myrmotherula pygmæa*, adult male (p. 64).
    - cc. Pileum streaked with pale rufous or tawny; throat buff or pale tawny.  
*Myrmotherula pygmæa*, adult female (p. 64).

MYRMOTHERULA SURINAMENSIS (Gmelin).

SURINAM ANTWREN.

*Adult male*.—Pileum, hindneck, back, and scapulars black, narrowly streaked with white, the feathers of back extensively white basally; rump plain gray (nearly no. 6), much paler posteriorly; upper tail-coverts dusky, indistinctly margined terminally with whitish; tail black, the rectrices tipped with white and edged on middle portion with the same; wings black, the middle and greater coverts broadly tipped with white (forming two very conspicuous bands across wing), the remiges edged (except on basal portion of distal secondaries and proximal primaries) with white; under parts white, the throat narrowly, the chest, breast, sides, and flanks broadly, streaked with black; under wing-coverts and broad edgings to inner webs of primaries white; maxilla dull black, mandible dull whitish (in dried skins); legs and feet pale yellowish gray (in dried skins); length (skins), 90–107 (96); wing, 49.5–52.5 (51); tail, 26–28.5 (26.9); culmen, 14–15.5 (15); tarsus, 16.5–18.5 (17.2); middle toe, 9.5–10.5 (9.9).<sup>b</sup>

*Adult female*.—Pileum bright tawny, the occiput and posterior part of crown streaked with black, the hindneck more buffy and with black streaks broader; back and scapulars black, streaked with

<sup>a</sup> The following species, referred to *Myrmotherula* by Dr. Sclater, I have not seen and therefore have no very clear idea of the limits of the group: *M. guttata* (Vieillot), *M. spodionota* Sclater and Salvin, *M. atrogularis* Taczanowski, *M. hæmatonota* (Sclater), *M. pyrrhonota* Sclater and Salvin, *M. erythrura* Sclater, *M. erythronota* (Hartlaub), *M. hauxwelli* (Sclater), *M. longipennis* Pelzeln, *M. brevicauda* (Swainson), *M. urosticta* (Sclater), *M. inornata* Salvin, *M. unicolor* (Ménétriés), *M. longicauda* Berlepsch and Stolzmann, *M. sororia* Berlepsch and Stolzmann, *M. guayabambæ* Sharpe, *M. lafresnayana* (D'Orbigny), *M. viduata* Hartert, *M. sanctæmartæ* Allen, *M. behni* Berlepsch and Leverkuhn, and *M. boliviana* Berlepsch. It is not unlikely that when all these species can be critically compared a further subdivision of the genus may be required.

<sup>b</sup> Four specimens.

whitish (sometimes intermixed with grayish), the median interscapulars extensively white basally, forming a conspicuous patch when feathers are parted; rump buffy grayish, the upper tail-coverts darker, indistinctly margined with whitish; tail black, the rectrices tipped with white and edged for middle portion with same; wings black, the middle and greater coverts broadly tipped (mostly on outer webs) with white, the remiges edged (except on basal portion of distal secondaries and proximal primaries) with white; under parts plain buffy white, deepening into buff on chest and tawny-buff on malar region, the sides and flanks tinged with pale buffy grayish and, sometimes, very indistinctly streaked with darker; bill, etc., as in adult male; length (skins), 87-95 (90.5); wing, 48-52 (49.8); tail, 25.5-27 (25.7); tarsus, 14-15.5 (14.8); middle toe, 10.<sup>a</sup>

*Young female*.—Similar to the adult female but without any concealed white on interscapular region and under parts more deeply colored (buff deepening into tawny on chest and sides of head and neck).

Panamá (Verágua; Panamá; Lion Hill; San Pablo), through Colombia (Turbo; Remédios, Antioquía; Bogotá), Venezuela (Munduapo; Nicare; La Prición, Rio Caura; Rio Mato; Suapuré), to British Guiana (Demerara; Camacusa; Takutu R.; Carimang R.) and western Ecuador (Esmeraldas; Chimbo; Gualaquiza; Gualea; Foreste del Rio Peripa; San Nicolas; San Javier; Pambilár; Intac),<sup>b</sup> Cayenne, and eastern Brazil.

[*Sitta*] *surinamensis* GMELIN, Syst. Nat., i, pt. i, 1788, 444 (Surinam; based on *Surinam Nuthatch* Latham, Gen. Hist., iv, 72, pl. 62).

*Myrmotherula surinamensis* SCLATER, Proc. Zool. Soc. Lond., 1858, 234, pl. 141, fig. 1 (monogr.); Cat. Am. Birds, 1862, 179 (Cayenne; Esmeraldas, w. Ecuador); Cat. Birds Brit. Mus., xv, 1890, 231, part.—CASSIN, Proc. Ac. Nat. Sci. Phila., 1860, 190 (Turbo, Colombia).—LAWRENCE, Ann. Lyc. N. Y., vii, 1862, 293 (Lion Hill, Panamá).—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1864, 356 (Lion Hill); 1879, 525 (Remédios, Antioquía, Colombia; habits; descr. nest and eggs).—SALVIN, Ibis, 1874, 311 (Turbo, Colombia; Panamá); 1885, 425 (Camacusa, British Guiana).—BERLEPSCH and TACZANOWSKI, Proc. Zool. Soc. Lond., 1883, 564 (Chimbo, w. Ecuador; crit.).—SALVIN and GOD-

<sup>a</sup> Five specimens.

| Locality.                                            | Wing. | Tail. | Culmen. | Tarsus. | Middle toe. |
|------------------------------------------------------|-------|-------|---------|---------|-------------|
| MALES.                                               |       |       |         |         |             |
| Three adult males from Panamá (line of railway)..... | 50.5  | 26.3  | 15.3    | 17.3    | 10          |
| One adult male from Turbo, n. w. Colombia.....       | 52.5  | 28.5  | 14      | 17      | 9.5         |
| FEMALES.                                             |       |       |         |         |             |
| Three adult females from Panamá.....                 | 49    | 26.2  | 15.2    | 17.5    | 10          |
| One adult female from British Guiana.....            | 50    | 23    | 14      | 17.5    | 10          |

<sup>b</sup> I have seen specimens from Panamá, Colombia, and British Guiana only.



- MAN, Biol. Centr.-Am., Aves, ii, 1892, 209, part.—SALVADORI and FESTA, Boll. Mus. Zool., etc., Torino, xv, no. 362, 1899, 29 (Gualaquiza, e. Ecuador; Foreste del Rio Peripa, w. Ecuador).—BANGS, Proc. New Engl. Zool. Club, ii, 1900, 23 (Loma del León, Panamá).—GOODFELLOW, Ibis, 1902, 64 (San Nicolas and Guala, w. Ecuador).—BERLEPSCH and HARTERT, Novit. Zool., ix, 1902, 73 (Munduapo, etc., Venezuela; crit.).—HARTERT, Novit. Zool., ix, 1902, 612 (San Javier and Pambilár, n. w. Ecuador; crit.).—HELLMAYR, Bull. Brit. Orn. Club, xvi, 1906, 53 (Pará, Brazil).—BERLEPSCH, Novit. Zool., xv, 1908, 154 (Cayenne).
- [*Myrmotherula*] *surinamensis* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 71.—SHARPE, Hand-list, iii, 1901, 20.
- Myrmotherula surinamensis surinamensis* MENEGAUX and HELLMAYR, Bull. Soc. Philom., sér. 9, viii, 1906, 48 (crit.).
- M[yrmotherium] surinamense* CABANIS and HEINE, Mus. Hein., ii, July, 1859, 13, footnote.
- M[yrmotherula] surinamensis typica* SCLATER, Cat. Birds Brit. Mus., xv, 1890, 232, in list of specimens (Veragua, Panamá, and San Pablo Station, Panamá; Bogotá and Remédios, Colombia; Intac and Esmeraldas, w. Ecuador; Takutu River, Carimang River, and Camacusa, Brit. Guiana).
- Myiothera pusilla* PUCHERAN (ex Cuvier, manuscript), Archiv. Mus. Paris, vii, 1855, 335, part (Cayenne; =adult male; see Menegaux and Hellmayr, Bull. Soc. Philom., 1906, 48).

### MYRMOTHERULA PYGMÆA (Gmelin).

#### PYGMY ANTWREN.

*Adult male*.—Pileum and hindneck black, narrowly streaked with pale yellowish buff or buffy whitish; scapulars and interscapulars black, the former with outer web broadly edged with yellowish white, the latter with much less distinct whitish edgings; rump pale gray, slightly tinged with buffy yellowish; tail black, the rectrices narrowly edged with grayish; wings black, the middle and greater coverts broadly tipped (on outer webs) with yellowish white (forming two conspicuous wing-bands), the remiges narrowly edged (except on basal portion of distal secondaries and proximal primaries) with yellowish white; auricular and suborbital regions pale yellowish buffy, margined above and below by a rather broad postocular and a malar streak of black; chin and throat white; rest of under parts primrose or pale straw yellow, including under wing-coverts and broad edgings to inner webs of remiges; maxilla blackish brown with paler tomiium, mandible dull yellowish or whitish in dried skins, gray in life;<sup>a</sup> iris dark brown;<sup>a</sup> legs and feet horn color in dried skins, olive-green in life;<sup>a</sup> length (skin), 65; wing, 38.5; tail, 16; culmen, 13; tarsus, 15.5; middle toe, 8.5.<sup>b</sup>

*Adult female*.—Similar to the adult male "but cap striped with pale rufous; throat fulvous."<sup>c</sup>

<sup>a</sup> Cherrie; see Berlepsch and Hartert, Novit. Zool., ix, 1902, 73.

<sup>b</sup> One specimen from Panamá.

<sup>c</sup> Sclater, Cat. Birds. Brit. Mus., xv, 1890, 230. I have not seen the female of this species.

Panamá (Lion Hill; Panamá) through Colombia (Rio Truando; Bogotá), Venezuela (La Pricion, Rio Caura), British Guiana (Bartica Grove; Camacusa), Ecuador (Rio Napo; Sarayacu; Valle de Zamora) and Peru (Pebas; Yurimáguas; Chamicuros; Upper Ucayali; Xeberos; Chyavetas; Tarapata) to Cayenne and western Brazil (Borba and Humaytha, Rio Madeira).

[*Muscicapa*] *pygmæa* GMELIN, Syst. Nat., i, pt. ii, 1789, 933 (Cayenne; based on *Petit Gobe-mouche tacheté de Cayenne* Daubenton, Pl. Enl., pl. 831, fig. 2).

*Muscicapa pygmæa* LATHAM, Index Orn., i, 1790, 488.—VIEILLOT, Nouv. Dict. d'Hist. Nat., xxi, 1818, 484 (Cayenne).

[*Formicivora*] *pygmæa* CABANIS, Wiegmann's Archiv für Naturg., xiii, pt. i, 1847, 227.

[*Formicivora*] *pygmæa* BONAPARTE, Consp. Av., i, 1850, 200.

*Formicivora pygmæa* BURMEISTER, Syst. Ueb. Th. Bras., iii, 1856, 77.—SCLATER, Proc. Zool. Soc. Lond., 1855, 147 (Bogotá, Colombia); 1858, 67 (e. Ecuador).

*Myrmotherula pygmæa* SCLATER, Proc. Zool. Soc. Lond., 1858, 234 (monogr.); Cat. Am. Birds, 1862, 179 (Rio Napo, e. Ecuador); Cat. Birds Brit. Mus. xv, 1890, 230 (Bartica Grove and Camacusa, Brit. Guiana; Pebas, Yurimaguas, and Chamicuros, e. Peru; Rio Napo and Sarayacu, e. Ecuador; Bogotá, Colombia).—CASSIN, Proc. Ac. Nat. Sci. Phila., 1860, 190 (Rio Truando, Colombia).—LAWRENCE, Ann. Lyc. N. Y., vii, 1862, 235 (Lion Hill, Panamá).—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1866, 185 (Upper Ucayali, e. Peru); 1867, 750 (Xeberos, Yurimaguas, and Chyavetas, e. Peru), 978 (Pebas, e. Peru); 1873, 274 (Upper Ucayali, Xeberos, Yurimaguas, Chyavetas, Chamicuros, and Pebas, e. Peru); 1879, 624 (Yuracares, Bolivia).—PELZELN, Orn. Bras., ii, Abth., 1869, 80; iv, Abth., 1870, 417.—SALVIN, Ibis, 1870, 311 (Rio Truando, Colombia); 1874, 311 (synonymy); 1885, 425 (Brit. Guiana).—TACZANOWSKI, Proc. Zool. Soc. Lond., 1882, 30 (Yurimaguas, e. Peru); Orn. du Pérou, ii, 1884, 37.—BERLEPSCH, Journ. für Orn., 1889, 304 (Tarapata, n. Peru); Novit. Zool., xv, 1908, 154 (Cayenne).—SALVADORI and FESTA, Boll. Mus. Zool., etc., Torino, xv, no. 362, 1899, 29 (Valle de Zamora, Ecuador).—BERLEPSCH and HARTERT, Novit. Zool., ix, 1902, 73 (La Pricion, Rio Cuara, Venezuela).—HELLMAYR, Novit. Zool., xiv, 1907, 382 (Borba and Humaytha, Rio Madeira, Brazil; crit.).—SNETHLEGE, Bol. Mus. Goeldi, v, 1908, 55 (Bom Lugar, Rio Purús, n. Brazil).

[*Myrmotherula*] *pygmæa* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 71.—SHARPE, Hand-list, iii, 1901, 20.

[*Myrmophila*] *pygmæum* CABANIS and HEINE, Mus. Hein., ii, July, 1859, 13, footnote.

### Genus MYRMOPAGIS Ridgway.

*Myrmopagis* <sup>b</sup> RIDGWAY, Proc. Biol. Soc. Wash., xxii, Apr. 17, 1909, 69. (Type, *Myrmothera axillaris* Vieillot.)

(?) *Myrmophila* <sup>c</sup> CABANIS and HEINE, Mus. Hein., ii, July, 1859, 12. (Type, *Formicivora brevicauda* Swainson.)

<sup>a</sup> These two references, very strangely, are placed under *M. surinamensis* in the Biologia Centrali-Americana (Aves, ii, 209). I have seen the specimens on which they are based, and they are *M. pygmæa*, not *M. surinamensis*.

<sup>b</sup> Μύρμηξ, an ant; παγίς, a trap.

<sup>c</sup> "Von μύρμος (Ameise) und φιλεω (lieben)." (Cabanis and Heine.)

Small Formicariidæ resembling *Myrmotherula* but differing in relatively much longer tail (much more than half to more than two-thirds as long as wing), much stouter and relatively shorter and less depressed bill, the adult males neither streaked nor plain gray or slaty.

Bill decidedly shorter than head, rather stout, not depressed basally, its width at frontal antiæ about equal to or very little greater than its depth at same point and equal to less to slightly more than half the distance from nostril to tip of maxilla; culmen distinctly and rather sharply ridged, straight or nearly so for most of its length, rather strongly and abruptly decurved terminally, the tip of maxilla minutely but distinctly uncinate; tomium nearly straight, that of maxilla distinctly, that of mandible slightly notched subterminally; gonys faintly convex (more decidedly so basally). Nostril exposed, posteriorly nearly (sometimes quite) in contact with feathering of latero-frontal antiæ, roundish or broadly oval, margined for basal half by the membraneous cover of nasal fossæ (this sometimes extending along upper margin as a narrow "operculum"), and with a conspicuous internal tubercle. Rictal bristles present but minute (practically obsolete); feathers of chin, malar antiæ, and lores with slender terminal setæ. Wing moderate, with longest primaries distinctly longer than secondaries; sixth and seventh, or fifth, sixth, and seventh, primaries longest, the tenth (outermost) slightly more than one-half to nearly two-thirds as long as the longest, the ninth about as long as secondaries or a little shorter. Tail much more than half to more than two-thirds as long as wing, much rounded, the rectrices (12) moderately broad to rather narrow, rounded terminally. Tarsus decidedly longer than exposed culmen, less than one-third as long as wing (except in *M. ornata*), the acrotarsium distinctly scutellate, the planta tarsi usually fused (at least in part) or with the scutella somewhat indefinite as to form and arrangement (with a general tendency toward two longitudinal series); middle toe, with claw, decidedly shorter than tarsus; outer toe, without claw, reaching to beyond middle of subterminal phalanx of middle toe, the inner toe slightly shorter; hallux about as long as inner toe but much stouter; basal phalanx of middle toe wholly united to outer toe, for about half its length to inner toe; claws moderate in size and curvature, that of the hallux decidedly shorter than the digit. Plumage soft, lax, and blended, that of rump and flanks much elongated and fluffy; feathers of pileum not elongated.

*Coloration.*<sup>a</sup>—Adult males plain gray or slate color above, the wings black, spotted with white, the tail black with white tip to

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<sup>a</sup> Not having been able to examine much the greater number of the species referred by Dr. Scater to *Myrmotherula* (see note on page 62) I am not able to define the full range of variation as to coloration in this group.



lateral rectrices, the under parts black with flanks white or light gray; or, plain brown or olive above (sometimes with lower back and rump rufescent), the wing-coverts spotted with white, under parts paler brownish, the throat black spotted or streaked with white. Sexes very differently colored, adult females being brown or olive above, paler brownish, buffy, or whitish beneath.<sup>a</sup>

*Range*.—Honduras to Cayenne and Amazon Valley. (Several species.)<sup>b</sup>

KEY TO THE SPECIES AND SUBSPECIES OF MYRMOPAGIS.

a. General color black, or black and slate color, and white (no brown).

b. Flanks white; under wing-coverts immaculate white.

c. Upper parts black or slate-black. (Southern Honduras to Venezuela and western Ecuador.).....*Myrmopagis melæna*, adult male (p. 68).

cc. Upper parts slate-gray. (Guiana, Trinidad, and Amazon Valley.)

*Myrmopagis axillaris*, adult male (extralimital).<sup>c</sup>

bb. Flanks slate color, like back, etc.; under wing-coverts partly black.

c. Tail shorter (about 28 mm.); lesser and middle wing-coverts partly slate color, with anterior portion of the area much more extensively white. (Bolivia to eastern Ecuador.).....*Myrmopagis menetriesii*, adult male (extralimital).<sup>d</sup>

cc. Tail longer (33.5–38 mm.); lesser and middle wing-coverts black tipped with white, with anterior portion of the area much less extensively white. (Guatemala to Colombia and Venezuela.)

*Myrmopagis schisticolor*, adult male (p. 70).

aa. General color olive-brownish (no black except, sometimes, on throat).

b. Throat black and white. (Southern Honduras to western Ecuador.)

*Myrmopagis fulviventris*, adult male (p. 73).

bb. Throat plain buff or buffy whitish.

c. Middle and greater wing-coverts distinctly tipped with ochraceous-buff.

*Myrmopagis fulviventris*, adult female (p. 74).

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<sup>a</sup> Species examined are: *Myrmopagis gutturalis* (Scater and Salvin), *M. fulviventris* (Lawrence), *Myrmopagis ornata* (Scater), *M. menetriesii* (D'Orbigny), *M. schisticolor* (Lawrence), *M. axillaris* (Vieillot), and *M. melæna* (Scater).

<sup>b</sup> The range of the group and number of species composing it are matters of uncertainty owing to poor representation of the latter in the material examined.

<sup>c</sup> *Myrmothera axillaris* Vieillot, Nouv. Dict. d'Hist. Nat., xii, 1817, 113 (Guiana).—*Formicivora axillaris* Cabanis, in Wiegmann Archiv für Naturg., 1847, pt. 1, 226.—*M[yrmophila] axillaris* Cabanis and Heine, Mus. Hein., ii, July, 1859, 13.—*Myrmotherula axillaris* Scater, Proc. Zool. Soc. Lond., 1858, 236, part; Cat. Birds Brit. Mus., xv, 1890, 238.—*Myrmotherula axillaris axillaris* Hellmayr, Novit. Zool., xiv, 1907, 22 (Itaituba, Brazil; crit.), 32 (Obidos, Brazil), 69 (Teffe, Brazil; crit.), 383 (Humaytha and Borba, Rio Madeira, Brazil; crit.).—*M[yiothera] fuliginosa* Lichtenstein, Verz. Doubl., 1823, 45, part (Cayenne; Brazil).

<sup>d</sup> *Myrmothera menetriesii* D'Orbigny, Voy. Am. Mérid., Ois., 1839, 184 (Cochabamba, Bolivia).—*Formicivora menetriesii* Cabanis, in Wiegmann Archiv für Naturg., 1847, pt. i, 226; Menegaux and Hellmayr, Bull. Soc. Philom., 1906, 51 (crit.; type from Yuracares, Bolivia, in Paris Mus.).—*Myrmotherula menetriesii* Scater, Proc. Zool. Soc. Lond., 1858, 237; Cat. Birds Brit. Mus., xv, 1890, 240, part.—*M[yrmophila] menetriesii* Cabanis and Heine, Mus. Hein., ii, July, 1859, 13, footnote.—*Myrmotherula boliviana* Berlepsch, Journ. für Orn., Jan., 1901, 96 (San Mateo, n. Bolivia; coll. Count von Berlepsch). (See footnote on p. 70 of present work.)

- cc. Middle and greater wing-coverts not distinctly, if at all, tipped with buff.  
 d. Pileum and hindneck dull slate-grayish; back, etc., more grayish olive; under parts paler buffy, the throat and flanks nearly white.

*Myrmopagis melæna*, adult female, (p. 68).

- dd. Pileum and hindneck brown; back, etc., more brownish olive; under parts deeper (more ochraceous) buffy, the throat ochraceous-buff, the flanks buffy olive.....*Myrmopagis schisticolor*, adult female (p. 71).

### MYRMOPAGIS MELÆNA (Sclater).

#### BLACK ANTWRN.

*Adult male*.—Above plain black or slate-black, the wing-coverts spotted or dotted with white (a roundish or subtriangular spot at tip of each feather), outer web of exterior row of scapulars broadly edged with white, and a large white patch covering inner-anterior portion of lesser wing-covert area;<sup>a</sup> lateral rectrices (sometimes all but middle pair) tipped with white; under wing-coverts, broad edgings to inner web of remiges, and an extensive patch of soft elongated feathers covering sides and flanks, white; rest of under parts uniform black, or slate-black; bill black, the mandible sometimes more plumbeous; iris brown; legs and feet horn color (bluish gray or grayish blue in life); length (skins), 78–99 (91); wing, 50–56 (52.4); tail, 29.5–37 (32.4); culmen, 13–14.5 (13.6); tarsus, 15–17 (15.7); middle toe, 8.5–10 (9).<sup>b</sup>

*Immature male*.—Similar to the adult male, but the black of upper parts replaced by blackish slate, that of the under parts by slate color, clouded, more or less extensively, with black, the chin and upper throat sometimes mostly pale gray or grayish white; younger individuals with terminal spots of greater wing-coverts buffy instead of white.

*Adult female*.—Pileum and hindneck dark mouse gray or dull slate color, passing into olive on back and scapulars, this into brownish olive or olive-brown on rump and upper tail-coverts; tail dusky brown, the rectrices edged with russet-brown or sepia; general color of wings deep olive or olive-brown, the greater wing-coverts and secondaries more russet-brown on edges, the primaries edged with lighter and more buffy olive; middle and greater wing-coverts indistinctly tipped with russet-brown; auricular, suborbital, and malar regions, chin, and throat dull buffy whitish, the first suffused with grayish and with narrow shaft-streaks of whitish; rest of under parts, including under wing-coverts and broad edgings to inner webs of remiges, buff (more or less deep); maxilla blackish brown with paler tomia, mandible dull yellowish (bluish gray or grayish blue in life); iris brown; legs and feet horn color (bluish gray or grayish blue in

<sup>a</sup> Usually there are also narrow and indistinct whitish edgings to some of the remiges.

<sup>b</sup> Fifteen specimens.

life); length (skins), 89-96 (90); wing, 47-54 (50.6); tail, 29-34 (31.5); culmen, 12.5-14 (13.3); tarsus, 15-16 (15.3); middle toe, 8.5-9 (8.9).<sup>a</sup>

Southern Honduras (Rio Segóvia), Costa Rica (Angostura; Naranjo de Cartago; Rio Reventazón; Jiménez; Pacuare; Orosí; Sipúrio; La Balsa; San José; Rio Sísola; El Hogár; Guápiles; La Junta; Carrillo; Las Trojas; Rio Frio; La Vijagua), and Panamá (Panamá; Lion Hill; Chepo), through Colombia (Rio Truando; Turbo; Nechi, Antioquia; Bogotá) and Ecuador (Sarayacu; Foreste del Rio Peripa; Santo Domingo) to Peru (Rio Huallaga; Lower Ucayali; Xeberos; Chyavetas; Chamicuros; Pebas; Moyabamba) and Venezuela (Maipures; Perico; Bichaco; Munduapo).

*Formicivora axillaris* (not *Myrmothera axillaris* Vieillot) SCLATER, Proc. Zool. Soc. Lond., 1855, 147 (Bogotá).

*Myrmotherula axillaris* CARRIKER, Ann. Carnegie Mus., v, 1908, 8 (Rio Sísola, Talamanca, Costa Rica; crit.).

*Formicivora melana* SCLATER, Proc. Zool. Soc. Lond., 1857, 130 (Bogotá, Colombia; coll. P. L. Sclater).—LAWRENCE, Ann. Lyc. N. Y., viii, 1863, 484 (Lion Hill, Panamá).

*Myrmotherula melana* SCLATER, Proc. Zool. Soc. Lond., 1858, 237 (monogr.; Bogotá); Cat. Am. B. 1862, 180 (do.).—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1864, 356 (Lion Hill; crit.); 1866, 186 (Rio Ucayali, e. Peru); 1867, 750 (Rio Huallaga, e. Peru); 1873, 274 (lower Ucayali, Xeberos, Chyavetas, Chamicuros, e. Peru); 1879, 525 (Nechi, Antioquia, Colombia).—LAWRENCE, Ann. Lyc. N. Y., ix, 1868, 107 (Angostura and Pacuare, Costa Rica).—FRANTZIUS, Journ. für Orn., 1869, 305 (Costa Rica).—PELZELN, Orn. Bras., ii, Abth., 1869, 82.—SALVIN, Ibis, 1874, 311 (Rio Truando, Colombia; Panamá; Costa Rica; synonymy).—BOUCARD, Proc. Zool. Soc. Lond., 1878, 61 (Costa Rica).—TACZANOWSKI, Orn. du Pérou, ii, 1884, 48.—ZELEDÓN, Anal. Mus. Nac. Costa Rica, 1887, 115 (Pacuare, Naranjo de Cartago, and Las Trojas, Costa Rica).—SCLATER, Cat. Birds Brit. Mus., xv, 1890, 239 (Angostura, Costa Rica; Panamá and Chepo, Isthmus Panamá; Antioquia and Bogotá, Colombia; Sarayacu, e. Ecuador; Xeberos, YQUITOS, Pebas, and Chamicuros, e. Peru).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 211.—RICHMOND, Proc. U. S. Nat. Mus., xvi, 1893, 501 (Rio

<sup>a</sup> Fifteen specimens.

| Locality.                                                  | Wing. | Tail. | Culmen. | Tarsus. | Middle toe. |
|------------------------------------------------------------|-------|-------|---------|---------|-------------|
| MALES.                                                     |       |       |         |         |             |
| Ten adult males from Costa Rica.....                       | 51.6  | 31.5  | 13.4    | 15.3    | 9           |
| One adult male from Panamá.....                            | 52.5  | 31    | 14      | 15.5    | 8.5         |
| Two adult males from n. w. Colombia (Rio Truando).....     | 53    | 33.5  | 13.5    | 16      | 9           |
| Two adult males from central Colombia (Bogotá).....        | 56    | 36    | 14.2    | 16      | 9.2         |
| One adult male from Peru.....                              | 53    | 33.5  | 14      | 16.5    | 9.5         |
| FEMALES.                                                   |       |       |         |         |             |
| One adult female from southern Honduras (Rio Segovia)..... | 49.5  | 32    | 13.3    | 15.3    | 8.5         |
| Ten adult females from Costa Rica.....                     | 50    | 31    | 13.2    | 15.2    | 8.9         |
| Two adult females from Panamá.....                         | 50.5  | 32.2  | 13      | 16      | 9           |
| Two adult females from n. w. Colombia (Turbo).....         | 53.7  | 32.7  | 13.5    | 15      | 8.7         |



Frio, Costa Rica).—SALVADORI and FESTA, Boll. Mus. Zool., etc., xv, no. 362, 1899, 30 (Foreste del Rio Peripa, w. Ecuador).—GOODFELLOW, Ibis, 1902, 64 (Santo Domingo, w. Ecuador).—BERLEPSCH and HARTERT, Novit. Zool., ix, 1902, 74 (Maipures, etc., Venezuela; crit.; descr. nest and eggs).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 608 (Caribbean lowlands up to 1,500 ft., Costa Rica; crit.; habits).

[*Myrmotherula*] *melæna* PELZELN, Orn. Bras., iv, Abth., 1870, 418.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 72.—SHARPE, Hand-list, iii, 1901, 22.

*M[yrnophila] melaena* CABANIS and HEINE, Mus. Hein., ii, July, 1859, 13.

*Myrmotherula albigula* LAWRENCE, Ann. Lyc. Nat. Hist. N. Y., viii, 1867, 131 (Panamá Railway; coll. G. N. Lawrence; = ♀; see Salvin, Ibis, 1874, 317); ix, 1868, 108 (Angostura, Costa Rica).—FRANTZIUS, Journ. für Orn., 1869, 305 (Costa Rica).

### MYRMOPAGIS SCHISTICOLOR (Lawrence).

#### SLATY ANTWRN.

Similar to *M. menetriesii* D'Orbigny (?)<sup>a</sup> but tail much longer (both absolutely and relatively); adult male with wing-coverts much darker, the lesser and middle coverts being wholly black (except for the white terminal spots), instead of slate color with black subterminal area, and inner-anterior portion of lesser wing-covert area much less extensively white.

*Adult male*.—Above mainly uniform slate color; wing-coverts, which are black, each tipped with a transversely subtriangular or subrounded spot of white; primary coverts and alula also black, the former with a small white mark at tip of outer web, the latter terminally margined with white; a white patch (mostly concealed) at junction of wing and body; chin, throat, and chest (sometimes breast also, at least medially) uniform black; malar region black, barred with slate-gray; sides of head and neck, together with lateral and posterior under parts, uniform slate color, except under tail-coverts, which are margined terminally with white and barred subterminally with black; under wing-coverts mixed white and blackish; inner webs of remiges broadly edged with brownish white; bill black; iris brown; legs and feet grayish, horn color, or dusky (bluish gray or grayish blue in life); length (skins), 90–105 (96.5); wing, 54–61 (56.8); tail, 33–38 (36); culmen, 12.5–14.5 (13.3); tarsus, 15.5–17 (16.3); middle toe, 9.5–10 (9.7).<sup>b</sup>

<sup>a</sup> Never having seen a specimen from Bolivia (the type locality of *Myrmothera menetriesii*) comparison of Colombian and Central American specimens has been made with one from Napo, eastern Ecuador, which may or may not represent the true *M. menetriesii*. The specimen in question, while having the wing as long as the shortest-winged example of *M. schisticolor* (54 mm.) has the tail barely 28 mm., the shortest-tailed adult male of *M. schisticolor* having the tail 33.5 mm., while others range up to 38 mm.

<sup>b</sup> Twenty-two specimens from Costa Rica, Panamá, and Colombia.

*Adult female*.—Pileum and hindneck plain buffy olive-brown or raw umber; the back, scapulars, rump, and upper tail-coverts lighter and less brownish olive; tail deep brown (sepia), the edges of the rectrices brighter, more russet brown; general color of wings olive, the tips of wing-coverts (broadly but indistinctly) more cinnamon-brownish; sides of head, chin, and throat buffy, the former more or less suffused with olive or olive-brown; rest of under parts tawny-buff or clay color, deeper and browner, or tinged with olivaceous, on sides and flanks; under wing-coverts deep buff or tawny-buff; inner webs of remiges broadly edged with paler buff; maxilla horn brown or dusky with paler tomium, mandible pale dull yellowish (grayish blue to flesh color in life); legs and feet light horn color (bluish gray or grayish blue in life); length (skins), 88–104 (96); wing, 51–56.5 (54.4); tail, 31–37.5 (34.6); culmen, 12–14 (13.1); tarsus, 15.5–17 (16.2); middle toe, 9–10 (9.7).<sup>a</sup>

*Immature male*.—Precisely like the adult female in coloration. (Older specimens show more or less of black on the throat, the lateral portion of which, together with more or less of sides of head, are slate-gray.)

*Young male (first plumage)*.—Similar to the adult female but back tinged with dark purplish brown, and under parts of body clouded with dark purplish brown (seal brown or dark chocolate), the chest nearly uniformly of this color.

*Young (nestling)*.—Above uniform vandyke brown, below uniform<sup>1</sup> russet.

Guatemala (Choctúm and Samayoa, Vera Paz), Nicaragua (Matagalpa), Costa Rica (Turrialba; Barranca; Dota; Naranjo de Cartago; Grécia; Guayabo; Carrillo; Pozo del Pitál; Pozo Azul de Pirrís; Boruca; Lagarto; Térraba; El General; La Vijagua; Tenório), Panamá (Santiago, Santa Fé, Chitra, and Calovévora, Veragua; Boquete, Divala, and Volcan de Chiriquí, Chiriquí) and through

<sup>a</sup> Fifteen specimens, from Guatemala, Costa Rica, and Panama.

| Locality.                                                        | Wing. | Tail. | Culmen. | Tarsus. | Middle toe. |
|------------------------------------------------------------------|-------|-------|---------|---------|-------------|
| MALES.                                                           |       |       |         |         |             |
| Ten adult males from Costa Rica.....                             | 56.8  | 36.2  | 13.3    | 16.2    | 9.8         |
| Ten adult males from Panamá.....                                 | 56.1  | 36.2  | 13.2    | 16.3    | 9.6         |
| Two adult males from Colombia.....                               | 60    | 34    | 14      | 16      | 9.7         |
| One adult male (of <i>M. menetriesii</i> ?) from e. Ecuador..... | 54    | 28    | 12.5    | 16.5    | 9.5         |
| FEMALES.                                                         |       |       |         |         |             |
| Two adult females from Guatemala.....                            | 52    | 36.2  | 12.2    | 16      | 9.5         |
| Ten adult females from Costa Rica.....                           | 54.4  | 33.9  | 13.2    | 16.3    | 9.7         |
| Three adult females from Panamá.....                             | 55.2  | 35.9  | 13.2    | 16      | 9.7         |

Colombia (Los Tambos; Rio Conquita; Valparaiso; Bogotá) to Venezuela (Puerto Cabello; San Esteban).

*Myrmotherula menetriesi* (not *Myrmothera menetriesii* D'Orbigny) SALVIN, Proc. Zool. Soc. Lond., 1867, 144 (Santiago de Veragua, Panamá; crit.); 1869, 252 (San Esteban, Venezuela); 1870, 195 (Volcan de Chiriquí, Chitra, Calovévora, and Bugaba, Panamá; crit.); Ibis, 1874, 310 (Veragua and Chiriquí, Panamá; Costa Rica; Vera Paz, Guatemala; synonymy).—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1869, 252 (Venezuela).—BOUCARD, Proc. Zool. Soc. Lond., 1878, 61 (Naranjo de Cartago, Costa Rica).—ZELEDÓN, Anal. Mus. Nac. Costa Rica, i, 1887, 115 (Barranca and Pozo Azul de Pirris, Costa Rica).—SCLATER, Cat. Birds Brit. Mus., xv, 1890, 240, part (Choctúm and Samayoa, Vera Paz, Guatemala; Dota Mts., Costa Rica; Calovevora, Santa Fé de Veragua, Volcan de Chiriquí, and Bugaba, Panamá; Bogotá; Puerto Cabello and San Esteban, Venezuela).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 212, part (Matagalpa, Nicaragua; Grécia, etc., Costa Rica, and other Central American localities; Colombia; Venezuela).—BERLEPSCH, Zeitschr. Orn., 1887, 185 (Bogotá, Colombia).—CHERRIE, Anal. Inst. Fis.-Geog. Costa Rica, vi, 1893, 19 (Pozo del Pitál, Costa Rica).—BANGS, Auk, xxiv, 1907, 296 (Boruca and Pozo del Rio Grande, s. w. Costa Rica).

[*Myrmotherula*] *menetriesi* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 72, part.—SHARPE, Hand-list, iii, 1901, 22, part (Guatemala to Panamá; Colombia; Venezuela).

*Myrmotherula menetriesii* BANGS, Proc. New Engl. Zool. Club, iii, 1902, 41 (Boquete and Volcan de Chiriquí, 3,000–7,800 ft.).

*Myrmotherula menetriesi* CHERRIE, Expl. Zool. Merid. Costa Rica, 1893, 41 (Lagarto, Boruca, and Térraba, s. w. Costa Rica).

*Formicivora schisticolor* LAWRENCE, Ann. Lyc. Nat. Hist. N. Y., viii, 1867, 172 (Turrialba, Costa Rica; coll. U. S. Nat. Mus.); ix, 1868, 108 (Turrialba and Barranca, Costa Rica).—FRANTZIUS, Journ. für Orn., 1869, 305 (Costa Rica).

*Myrmotherula schisticolor* HELLMAYR, Verh. k. k. Zool.-bot. Ges. Wien, Jan., 1903, 211 (Guatemala to n. w. Venezuela and s. e. Peru).—MENEGAUX and HELLMAYR, Bull. Soc. Philom., 9 sér., viii, 1906, 50 (crit.).

*Myrmotherula menetriesi schisticolor* CARRIKER, Ann. Carnegie Mus., vi, 1910, 609 (Costa Rica; crit.; habits).

*Myrmotherula modesta* LAWRENCE, Ann. Lyc. Nat. Hist. N. Y., ix, 1870 (pub. March, 1869), 108 (Grécia, Costa Rica; coll. U. S. Nat. Mus.;=female).—FRANTZIUS, Journ. für Orn., 1869, 305 (Costa Rica).

*Myrmotherula nigrorufa* BOUCARD, Ann. Soc. Linn. Lyon, n. s., xxv, 1878, 38 (Guatemala; coll. Mus. Paris;=young male; see Salvin, Ibis, 1879, 215 and Menegaux and Hellmayr, Bull. Soc. Philom., 1906, 50).

#### ECUADOREAN AND PERUVIAN REFERENCES.<sup>a</sup>

*Formicivora menetriesi* (not *Myrmothera menetriesii* D'Orbigny?) SCLATER, Proc. Zool. Soc. Lond., 1858, 67 (e. Ecuador).

<sup>a</sup> While the only specimen from a locality south of Colombia seen by me is certainly *not* the same as the Colombian and Central American form, Hellmayr says (Verh. k. k. Zool.-bot. Ges. Wien, 1903, 211) that the latter extends as far as south-eastern Peru. It would therefore appear that two forms occur in Ecuador and Peru. (See also Berlepsch and Taczanowski, Proc. Zool. Soc. Lond., 1883, 564, 565, where peculiarities of specimens from northern Peru are discussed.)



- Myrmotherula menetriesi* SCLATER, Proc. Zool. Soc. Lond., 1858, 237, part (monogr.); 1860, 67 (Pallatanga, w. Ecuador), 89 (Nanegal, e. Ecuador; crit.); Cat. Am. Birds, 1862, 180 (Nanegal and Rio Napo, e. Ecuador; Pallatanga, w. Ecuador); Cat. Birds Brit. Mus., xv, 1890, 240, part (Pallatanga and Nanegal).—TACZANOWSKI, Proc. Zool. Soc. Lond., 1874, 530 (Amable Maria and Paltaypampa, centr. Peru); 1882, 30 (Huambo, n. e. Peru); Orn. du Pérou, ii, 1884, 45.—BERLEPSCH and TACZANOWSKI, Proc. Zool. Soc. Lond., 1883, 564 (Chimbo, w. Ecuador; crit.); 1884, 302 (Sarupata, Ecuador).—TACZANOWSKI and BERLEPSCH, Proc. Zool. Soc. Lond., 1885, 101 (Machay and Mapoto, Ecuador; crit.).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 211, part (Ecuador; Peru).—SALVADORI and FESTA, Boll. Mus. Zool., etc., Torino, xv, no. 362, 1899, 30 (Foreste del Rio Peripa, w. Ecuador; crit.).—GOODFELLOW, Ibis, 1902, 65 (Gualea, w. Ecuador).
- [*Myrmotherula menetriesi* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 72, part.—SHARPE, Hand-list, iii, 1901, 22, part (Ecuador; Peru).—BERLEPSCH and STOLZMAN, Proc. Zool. Soc. Lond., 1902, 58 (Amable Maria, centr. Peru).
- Myrmotherula menetriesi*? SCLATER, Proc. Zool. Soc. Lond., 1860, 67 (Pallatanga, e. Ecuador).
- Myrmotherula menetriesii* TACZANOWSKI and BERLEPSCH, Proc. Zool. Soc. Lond., 1885, 68 (Chimbo, Mapoto, and Machay, w. Ecuador).

### MYRMOPAGIS FULVIVENTRIS (Lawrence).

#### LAWRENCE'S ANTWREN.

*Adult male*.—Above plain olive (varying from grayish to brownish olive), becoming slightly grayer on pileum (where feathers are very indistinctly margined or flecked with dusky) and more brownish posteriorly; upper tail-coverts and tail much browner (sepia brown to prouts brown); more anterior lesser wing-coverts plain olive, the more posterior ones partly or wholly black, each with a terminal spot of buff; middle and greater coverts black with a terminal guttate or subtriangular spot of buff; remiges brownish olive to olive-brown (nearly prouts brown); auricular, suborbital, and malar regions dull grayish white, indistinctly streaked or flecked with dusky grayish; chin white; throat black, each feather tipped with a large guttate spot of white; rest of under parts light buffy olive or olive-buffy, slightly clearer and more buffy on abdomen, grayer on chest, and more olivaceous on sides and flanks; under wing-coverts and broad edgings to inner webs of remiges pale brownish buffy; mandible dark horn color with paler tomium, mandible dull whitish (pale grayish blue or bluish gray in life); iris brown, reddish brown, or straw color; <sup>a</sup> legs and feet light horn color (bluish gray or grayish blue in life); length (skins), 86-104 (96); wing, 48.5-53.5 (50.8); tail, 30-37 (32.7); culmen, 14-15.5 (14.8); tarsus, 15.5-17 (16.1); middle toe, 10.5-11.5 (11).<sup>b</sup>

<sup>a</sup> M. A. Carriker, jr., on labels.

<sup>b</sup> Thirteen specimens.

*Adult female*.—Similar to the adult male but whole throat plain buffy, and general color of wing-coverts dusky olive instead of blackish; length (skins), 86–107 (99); wing, 48–52.5 (50.5); tail, 31.5–36 (34.2); culmen, 14–15.5 (14.6); tarsus, 16–17 (16.6); middle toe, 10.5–11.5 (11).<sup>a</sup>

Southern Honduras (Rio Segóvia) through Nicaragua (Rio Escondido; San Emilis, Lake Nicaragua), Costa Rica (Angostura; San José; San Carlos; Jiménez; Rio Reventazón; Rio Matina; Pacuare; Siquirres; Sipúrio; Cuábre; Guápiles; Carrillo; El Hogár; Guácimo; La Vijagua; La Cristina), Panamá (Lion Hill) and Colombia (Remédios, Antioquía; Naranjo, Bucaramanga; Rio Truando) to western Ecuador (Esmeraldas; Foreste del Rio Peripa).<sup>b</sup>

*Myrmotherula gularis* (not *Thamnophilus gularis* Spix) SCLATER, Proc. Zool. Soc. Lond., 1860, 294, part (Panamá).

*Myrmotherula ornata* (not *Formicivora ornata* Sclater) CASSIN, Proc. Ac. Nat. Sci. Philad., 1860, 191, part (Rio Truando, Colombia).

*Myrmotherula*, sp. no. 216, LAWRENCE, Ann. Lyc. N. Y., vii, 1862, 325 (Lion Hill, Panamá).

*Myrmetherula fulviventris* LAWRENCE, Ann. Lyc. Nat. Hist. N. Y., vii, Feb., 1862, 468 (Lion Hill, Panamá; coll. G. N. Lawrence).

*Myrmotherula fulviventris* SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1864, 356 (Lion Hill; crit.); 1879, 525 (Remédios, Antioquía, Colombia).—LAWRENCE, Ann. Lyc. N. Y., ix, 1868, 108 (Angostura, Costa Rica).—FRANTZIUS, Journ. für Orn., 1869, 305 (Costa Rica).—WYATT, Ibis, 1871, 331 (Naranjo, Colombia).—SALVIN, Ibis, 1874, 311 (Rio Truando, Colombia; crit.).—BERLEPSCH, Journ. für Orn. 1884, 318 (Naranjo, Bucaramanga, Columbia).—RIDGWAY, Proc. U. S. Nat. Mus., x, 1887, 590 (Rio Segóvia, Honduras).—ZELEDÓN, Anal. Mus. Nac. Costa Rica, 1887, 115 (Pacuare and Jiménez, Costa Rica).—SCLATER, Cat. Birds Brit. Mus., xv, 1890, 234 (Angostura, Costa Rica; Verágua; Panamá; Bogotá; Remédios, Antioquía; Esmeraldas, Ecuador).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 210.—RICHMOND, Proc. U. S. Nat. Mus., xvi, 1893, 501 (Rio Escondido, Nicaragua).—(?) SALVADORI and FESTA, Boll. Mus. Zool., etc., Torino, xv, 1899, no. 362, 29 (Foreste del Rio Peripa, w. Ecuador; crit.).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 607 (Caribbean lowlands up to 1,500 ft., Costa Rica; habits; descr. nest and eggs).

[*Myrmotherula*] *fulviventris* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 71.—SHARPE, Hand-list, iii, 1901, 21, part.

<sup>a</sup>Thirteen specimens.

| Locality.                                                                 | Wing. | Tail. | Culmen. | Tarsus. | Middle toe. |
|---------------------------------------------------------------------------|-------|-------|---------|---------|-------------|
| MALES.                                                                    |       |       |         |         |             |
| Three adult males from Panamá.....                                        | 49.8  | 33    | 15.2    | 16.7    | 10.8        |
| Ten adult males from Costa Rica.....                                      | 51    | 32.5  | 14.7    | 16.2    | 10.9        |
| FEMALES.                                                                  |       |       |         |         |             |
| Three adult females from Panamá.....                                      | 49.5  | 33.3  | 14      | 16.7    | 10.8        |
| Ten adult males from Costa Rica (8), Nicaragua (1), and Honduras (1)..... | 50.8  | 34.4  | 14.7    | 16.6    | 11.1        |

<sup>b</sup>I have not seen a specimen from Ecuador.

## Genus MICRORHOPIAS Sclater.

*Microrhopias* SCLATER, Cat. Am. Birds., 1862, 182. (Type, *Thamnophilus quixensis* Cornalia.)

Small to very small Formicariidæ (length about 105–135 mm.) with long, graduated tail of 12 round-tipped rectrices (nearly as long as to longer than wing), tarsus much less than half as long as wing, nostril broadly oval (much broader than the narrow, sometimes nearly obsolete, operculum), the adult males with at least the chin, throat, chest, and median portion of breast black, and wing-coverts tipped with white.

Bill shorter than head, moderately stout, not compressed, its width at frontal antiæ little if any greater than its depth at same point and equal to about half the distance from nostril to tip of maxilla; culmen distinctly but not sharply ridged, nearly straight for basal half (more or less) more and more decurved terminally, the tip of maxilla slightly though distinctly uncinatè; tomia straight or nearly so, distinctly notched subterminally, the notch near tip of mandibular tomium less distinct; gonys gently convex, less so terminally. Nostril exposed, longitudinally oval, nearly in contact with feathering of latero-frontal antiæ, the superior operculum very narrow or practically obsolete. Rictal bristles well developed in *M. boucardi* and *M. consobrina*,<sup>a</sup> very minute (practically obsolete) in *M. intermedia*, *M. grisea*, *M. rufatra*, and allies; feathers of chin and loreal region with slender terminal setæ. Wing moderate, with longest primaries extending, more or less decidedly, beyond secondaries; fifth and sixth, sixth and seventh, or fifth, sixth and seventh, primaries longest, the tenth (outermost) one-half to three-fifths as long as the longest, the ninth shorter than secondaries. Tail nearly as long as to longer than wing, graduated (graduation equal to length of tarsus or more), the rectrices (12) rather broad, rounded terminally. Tarsus longer than whole culmen, one-third (*M. boucardi*, *M. consobrinus*) to two-fifths as long as wing (*M. grisea*, *M. intermedia*, *M. rufatra*), distinctly scutellate, the plantar scutella in two longitudinal series but sometimes partly fused or obsolete; middle toe, with claw, much shorter than tarsus; outer toe, without claw, reaching to slightly beyond middle of subterminal phalanx of middle toe, the inner toe slightly shorter; hallux about as long as inner toe but much stouter; basal phalanx of middle toe wholly united to outer toe, for about half its length to inner toe; claws moderate in size and curvature, that of the hallux decidedly shorter than its digit. Plumage full, lax, and blended, that of the rump and flanks elongated and more fluffy; feathers of pileum not elongated.

<sup>a</sup> Probably also in the closely related *M. quixensis* and *M. bicolor*, which, however, I have not seen.



*Coloration*.—(I.) Adult males black with white spots on wing-coverts, white tips to rectrices (or lateral rectrices mostly white), and interscapulars pure white basally; adult females slate color or blackish above, with white markings as in adult males, under parts cinnamon-rufous or chestnut. (II.) Adult males brownish gray, brown, or rufescent above, the wing-coverts black with terminal white spots, the lateral rectrices also tipped with white; chin, throat, chest, and median portion of breast (sometimes abdomen also) black, the sides and flanks whitish, grayish or fulvous; adult females similar but without black on under parts.

*Range*.—Southern Mexico to Cayenne, southeastern Brazil, Bolivia, and Peru. (About seven species.)<sup>a</sup>

KEY TO THE SPECIES AND SUBSPECIES OF MICRORHOPIAS.

- a. Upper parts black, the feathers of back pure white basally. (*Microrhopias boucardi*.)
  - b. White tips to lateral rectrices smaller (5–7 mm. long on outermost rectrix).
  - c. Flanks usually slate color. (Southeastern Mexico to Honduras.)  
*Microrhopias boucardi boucardi*, adult male (p. 78).
  - cc. Flanks usually black. (Nicaragua to Panamá.)  
*Microrhopias boucardi virgata*, adult male (p. 79).
  - bb. White tip to lateral rectrices larger (9–12 mm., or more, long on outermost pair). (Colombia to Cayenne and western Ecuador.)  
*Microrhopias boucardi consobrina*, adult male (p. 80).
- aa. Upper parts not black.
  - b. Feathers of back abruptly pure white basally; under parts wholly tawny or chestnut. (*Microrhopias boucardi*.)
  - c. White tip to lateral rectrices smaller (about 5–7 mm. long on outermost rectrix); under parts lighter than chestnut, upper parts more grayish slaty.
  - d. Under parts tawny. . . *Microrhopias boucardi boucardi*, adult female (p. 78).
  - dd. Under parts deep cinnamon-rufous or rufous-chestnut.  
*Microrhopias boucardi virgata*, adult female (p. 80).
  - cc. White tip to lateral rectrices larger (10–15 mm. long on outermost rectrix); under parts deep chestnut, upper parts more blackish slaty.  
*Microrhopias boucardi consobrina*, adult female (p. 80).
  - bb. Feathers of back not white basally; under parts not tawny or chestnut. (*Microrhopias grisea*.)
  - c. Sides of head, throat, chest, and breast uniform black. (*Adult males*.)
  - d. General color of upper parts darker (deep grayish sepia or purplish brownish slate color).

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<sup>a</sup> I am very doubtful whether the group comprising *Turdus griseus* Boddaert, *Formicivora intermedia* Cabanis, and *Thamnophilus rufater* Lafresnaye and D'Orbigny should be included in this genus, for apart from the very different style of coloration, these species differ from *Microrhopias* proper in obsolete instead of conspicuously developed rectal bristles, much longer tarsus, and some other less marked characters.

- c. White superciliary stripe narrower; white tip to wing-coverts smaller. (Cayenne to eastern Brazil.)

***Microrhopias grisea grisea*, adult male (extralimital).<sup>a</sup>**

- cc. White superciliary stripe broader; white tip to wing-coverts larger.

- f. Flanks and sides less extensively white, the black of abdomen relatively broader. (San Miguel Island, Bay of Panamá.)

***Microrhopias grisea alticincta*, adult male (p. 82).**

- ff. Flanks and sides more extensively white, the black of abdomen relatively narrower.

- g. Larger (wing 59.5, tail 52.5, tarsus 22). (Tobago.)

***Microrhopias grisea tobagensis*, adult male (extralimital).<sup>b</sup>**

- gg. Smaller (wing 53-54.5, tail 46-49, tarsus 20-21). (Margarita Island, Venezuela.)

***Microrhopias grisea margaritensis*, adult male (extralimital).<sup>c</sup>**

- dd. General color of upper parts paler (hair brown or broccoli brown). (Mainland of Venezuela and Colombia.)

***Microrhopias grisea intermedia*, adult male (extralimital).<sup>d</sup>**

- ee. Sides of head (below eyes) and under parts buffy or whitish. (*Adult females*.)

- d. General color of upper parts darker (deep grayish brown); under parts distinctly buffy.

- c. White tip to wing-coverts much smaller; under parts (except chin, upper throat, and under tail-coverts) deep buff or ochraceous-buff.

***Microrhopias grisea grisea*, adult female (extralimital).**

- cc. White tip to wing-coverts much larger; under parts paler buffy.

***Microrhopias grisea alticincta*, adult female (p. 82).**

- dd. General color of upper parts paler (light grayish brown); under parts dull white, tinged with buff on chest and sides.

***Microrhopias grisea intermedia*, adult female (extralimital).<sup>e</sup>**

<sup>a</sup> *Turdus griseus* Boddaert, Tabl. Pl. Enl., 1783, 39 (based on *Le grisin de Cayenne* Daubenton, Pl. Enl., pl. 643, fig. 1).—[*Motacilla*] *grisea* Gmelin, Syst. Nat., i, pt. 2, 1789, 964.—*Thamnophilus griseus* Spix, Av. Bras., ii, 1825, 29, part, pl. 41, fig. 1 (Pará).—*Formicivora grisea* Cabanis, in Wiegmann Archiv für Naturg., 1847, pt. i, 225.—*Formicivora grisea* Sclater, Proc. Zool. Soc. Lond., 1858, 238; Cat. Birds Brit. Mus., xv, 1890, 249.—*Ellipura grisea* Burmeister, Syst. Ueb. Th. Bras., iii, 1856, 67.—*Drymophila grisea* Richmond, Auk, xvi, Oct., 1899, 354, in text.—*Formicivora nigricollis* Swainson, Zool. Journ., ii, no. vi, July, 1825, 147 (catanga woods of Humildez, Brazil; coll. W. Swainson).—*M[ythothera] superciliaris* Lichtenstein, Verz. Doubl., 1823, 44 (Cayenne).—*Formicivora* [a] *deluzae* Ménétriés, Mém. Acad. Imp. Sci. St. Petersb., ser. 6, etc., i, 1835, 484, pl. 5, fig. 2 (Serra dos Orgãos, near Rio de Janeiro, Brazil; coll. Acad. St. Petersb.).

<sup>b</sup> *Formicivora tobagensis* Dalmás, Mém. Soc. Zool. France, xiii, 1900, 141 (Tobago; coll. Count Dalmás).—*Drymophila* [a] *grisea tobagensis* Ridgway, Proc. Biol. Soc. Wash., xxi, Oct. 20, 1908, 194, in text.

<sup>c</sup> *Drymophila grisea margaritensis* Ridgway, Proc. Biol. Soc. Wash., xxi, Oct. 20, 1908, 194 (Margarita I., Venezuela; coll. U. S. Nat. Mus.).

<sup>d</sup> *Formicivora* [a] *intermedia* Cabanis, in Wiegmann Archiv für Naturg., xiii, Bd. 1, Heft 2, 1847, 225 (Cartagena, Colombia, and Aragua Valley, Venezuela; coll. Berlin Mus.).—*Formicivora intermedia* Sclater, Cat. Birds Brit. Mus., xv, 1890, 250.—*Drymophila intermedia* Richmond, Auk, xvi, Oct., 1899, 354, in text.—*Eriodora intermedia* Bangs, Proc. Biol. Soc. Wash., xii, June 3, 1898, 138 (Santa Marta, Colombia).

<sup>e</sup> I have not seen adult females of *M. g. tobagensis* nor *M. g. margaritensis*. In addition to the forms mentioned in the key, two others (apparently conspecific) are autotopically unknown to me: *Formicivora orenocensis* Hellmayr, Bull. Brit. Orn. Club, xiv, Feb. 27, 1904, 54 (Altigracia, Orinoco R., Venezuela; coll. Tring Mus.), and *Formicivora cano-fumosus* Cherrie, Mus. Brookl. Inst. Arts and Sci., Science Bull., i, no. 16, June 30, 1909, 387 (Las Barrancas, Orinoco R., Venezuela; coll. Mus. Brooklyn Inst.).

## MICRORHOPIAS BOUCARDI BOUCARDI (Sclater).

## BOUCARD'S ANTWRN.

*Adult male*.—General color deep black, passing into slate color on sides and flanks; interscapulars extensively pure white beneath the surface (partly exposed); anterior portion of lesser wing-covert area (except on bend of wing) white, the other lesser coverts and middle coverts with a small roundish terminal spot of white; greater coverts broadly tipped with white, forming a very conspicuous band across wing; rectrices (except middle pair) broadly tipped with white (the white tips growing smaller toward middle rectrices); under wing-coverts (except along border of wing) and broad edgings to inner web of remiges white; bill black; iris brown; legs and feet blackish (grayish blue in life); length (skins), 98–111 (106); wing, 47–50.5 (48.6); tail, 43–49 (45.6); culmen, 13–14.5 (13.7); tarsus, 14.5–16 (15.5); middle toe, 8.5–9 (8.9).<sup>a</sup>

*Adult female*.—Above marked with white as in adult male (that on interscapular region more restricted, however), but black of head, neck, back, and rump replaced by dark slate color or blackish slate (more or less intermixed with black on interscapular region); under parts (including malar region) plain rufous-tawny, deepest on throat and chest; under wing-coverts and edges of inner webs of remiges white, as in adult male; bill, etc., as in adult male, but the former usually more brownish; length (skins), 96–117 (107); wing, 46.5–49 (47.7); tail, 43.5–47.5 (45.6); culmen, 12.5–14.5 (13.3); tarsus, 14.5–16 (15.4); middle toe, 8.5–9.5 (8.8).<sup>b</sup>

| <sup>a</sup> Fourteen specimens.                                  |       | <sup>b</sup> Thirteen specimens. |         |         |             |
|-------------------------------------------------------------------|-------|----------------------------------|---------|---------|-------------|
| Locality.                                                         | Wing. | Tail.                            | Culmen. | Tarsus. | Middle toe. |
| MALES.                                                            |       |                                  |         |         |             |
| Four adult males from southeastern Mexico.....                    | 48.9  | 45.2                             | 14.1    | 15.5    | 9           |
| Eight adult males from Guatemala.....                             | 48.2  | 45.8                             | 13.4    | 15.5    | 8.9         |
| Two adult males from Honduras and British Honduras.....           | 49.3  | 46.7                             | 14.3    | 15.3    | 9           |
| Four adult males ( <i>M. b. virginata</i> ) from Nicaragua.....   | 49    | 43.6                             | 14      | 15.9    | 8.9         |
| Ten adult males ( <i>M. b. virginata</i> ) from Costa Rica.....   | 49.7  | 44.3                             | 13.7    | 15.7    | 9           |
| Seven adult males ( <i>M. b. virginata</i> ) from Panamá.....     | 49.4  | 45                               | 13.7    | 15.6    | 8.9         |
| FEMALES.                                                          |       |                                  |         |         |             |
| Six adult females from southeastern Mexico.....                   | 47.5  | 44.9                             | 13.3    | 15.4    | 8.8         |
| Six adult females from Guatemala.....                             | 47.9  | 46.3                             | 13.2    | 15.4    | 8.7         |
| One adult female from British Honduras.....                       | 47.5  | 45                               | 14      | 15.5    | 9           |
| Ten adult females ( <i>M. b. virginata</i> ) from Costa Rica..... | 48.3  | 42.5                             | 13.4    | 15.6    | 9           |
| Three adult females from western Panamá (Divala, Chiriquí)...     | 48    | 43.8                             | 14      | 16.2    | 9.5         |
| One adult female from eastern Panamá (line of railway).....       | 47    | 42.5                             | 13      | 16      | 9.5         |



*Young male (nestling).*—Above plain sooty blackish or blackish brown (nearly clove brown), rather lighter (dark sepia) on head, the wings and tail nearly black; greater wing-coverts rather broadly tipped with white but with a narrow terminal margin of dusky; rectrices (except middle pair) tipped with white, as in adults; under parts plain dark sooty brown, tinged with chestnut-brown or vandyke brown.

Southeastern Mexico, in States of Vera Cruz (Playa Vicente; Buena Vista), Oaxaca (Acátepec) and Tabasco (Teapa) through Guatemala (Choctúm; sources of Rio de la Pasión; Yzabál; Telemán; Los Amates; Uspantán, Quiché) to Honduras (Omoa; San Pedro; Rio Blanco) and British Honduras (near Manatee Lagoon; Toledo District).

*Formicivora boucardi* SCLATER, Proc. Zool. Soc. Lond., 1858, 241, 300 (Acátepec, Oaxaca; coll. P. L. Sclater); 1859, 383 (Playa Vicente, Vera Cruz); Cat. Am. Birds, 1862, 183, pl. 16 (Oaxaca; Choctúm, Guatemala); Cat. Birds Brit. Mus., xv, 1890, 254, part (Acátepec, Oaxaca; Choctúm and sources of Rio de la Pasión, Guatemala).—MOORE, Proc. Zool. Soc. Lond., 1859, 55 (Omoa, Honduras).—SCLATER and SALVIN, Ibis, 1859, 119 (Omoa, Honduras; Proc. Zool. Soc. Lond., 1870, 837 (San Pedro, Honduras).—SALVIN and GOMMAN, Biol. Centr.-Am., Aves, ii, 1892, 216, part (Acátepec; Playa Vicente; Choctúm, Yzabál, and Telemán, Guatemala; Omoa and San Pedro, Honduras).—DEARBORN, Pub. 125, Field Mus. Nat. Hist., 1907, 109 (Los Amates, c. Guatemala).

[*Formicivora*] *boucardi* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 72, part.—SHARPE, Hand-list, iii, 1901, 26, part.

*Formicivora boucardii* BOUCARD, Ann. Soc. Linn. Lyon, 1878, 39 (Guatemala; Playa Vicente, Vera Cruz).

*D[rymophila] boucardi* RICHMOND, Auk, xvi, Oct., 1899, 354, in text.

### MICRORHOPIAS BOUCARDI VIRGATA (Lawrence).

#### PANAMÁ ANTWREN.

Similar to *M. b. boucardi* but adult male more intensely and extensively black (even the sides and flanks usually black or slate-black),<sup>a</sup> the adult female with color of under parts much darker (rufous-chestnut instead of rufous-tawny) and upper parts darker.

*Adult male.*—Length (skins), 96–113 (106); wing, 47.5–51 (49.5); tail, 40–49 (45.9); culmen, 13–14.5 (13.8); tarsus, 15–16 (15.7); middle toe, 8.5–9.5 (8.9).<sup>b</sup>

<sup>a</sup> A few specimens from Nicaragua and Costa Rica have the flanks slate color, much as in northern examples (*M. b. boucardi*), but all of the females seen from Costa Rica belong unmistakably to the Panamá form. (I have not seen any females from Nicaragua.)

The white mesial streaks showing on the adult male described by Mr. Lawrence (and on which the name *virgata* was based) are an individual peculiarity, which I do not find repeated in any other specimen examined, even from Panamá.

This form is distinctly intermediate in coloration between *M. b. boucardi* and *M. b. consobrina* of Colombia and Ecuador.

<sup>b</sup> Twenty-one specimens,

*Adult female*.—Length (skins), 96–109 (103); wing, 45–52 (48.2); tail, 40–46.5 (42.1); culmen, 12.5–14 (13.5); tarsus, 15–17 (15.8); middle toe, 8.5–10 (9.1).<sup>a</sup>

Nicaragua (Chontales; Los Sábalos; Rio Escondido; San Emilis), Costa Rica (San Carlos; Pejé; Pacuare; La Balsa; Talamanca; Sipúrio; Rio Sísola; Jiménez; Angostura; Guápiles; Guácimo; Siquirres; La Cristina; Tuís; El Hogár; San José; La Concepción; La Florída; Pozo Azul de Pirrís; Pozo del Pitál; Pozo del Rio Grande; Paso Real; Lagarto; Boruca; Buenos Aires; Palmár; El General; La Vijagua), and Panamá (Divala and Bugaba, Chiriquí; Panamá; Lion Hill).

*Formicivora boucardi* (not of Sclater, 1858) SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1864, 356 (Panamá; crit.).—SALVIN, Proc. Zool. Soc. Lond., 1870, 195 (Bugaba, Panamá); Ibis, 1872, 318 (Chontales, Nicaragua).—BOUCARD, Proc. Zool. Soc. Lond., 1878, 61 (San Carlos, Costa Rica).—NUTTING, Proc. U. S. Nat. Mus., vi, 1884, 405 (Los Sábalos, Nicaragua; habits).—SCLATER, Cat. Birds Brit. Mus., xv, 1890, 254, part (Chontales, Nicaragua; Pejé and Angostura, Costa Rica; Panamá, Bugaba, and Chiriquí, Panamá).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 216, part (Chontales and Los Sábalos, Nicaragua; Angostura, Pacuare, Pejé, San Carlos, Jiménez, La Balsa, and Pozo Azul de Pirrís, Costa Rica; Chiriquí, Bugaba, and Lion Hill, Panamá).—RICHMOND, Proc. U. S. Nat. Mus., xvi, 1893, 501 (Rio Escondido, Nicaragua; habits).—CHERRIE, Expl. Zool. Merid. Costa Rica, 1893, 43 (Palmár, Lagarto, Boruca, and Buenos Aires, s. w. Costa Rica; habits).—BANGS, Auk, xxiv, 1907, 296 (Boruca, Paso Real, Pozo del Rio Grande, and Lagarto, s. w. Costa Rica).

[*Formicivora*] *boucardi* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 72, part.—SHARPE, Hand-list, iii, 1901, 26, part.

*Formicivora boucardii* LAWRENCE, Ann. Lyc. N. Y., ix, 1868, 108 (Angostura, San José, and Pacuare, Costa Rica).—FRANTZIUS, Journ. für Orn., 1869, 305 (Costa Rica).—ZELEDÓN, Anal. Mus. Nac. Costa Rica, i, 1887, 115 (Pozo Azul, Pacuare, Jiménez, and La Balsa, Costa Rica).

*Formicivora boucardi* CHERRIE, Anal. Inst. Fis.-Geog. Costa Rica, vi, 1893, 19 (Pozo del Pitál, Costa Rica).

*Formicivora quixensis* (not *Thamnophilus quixensis* Cornalia) LAWRENCE, Ann. Lyc. N. Y., vii, 1862, 325 (Lion Hill Station, Panamá).

*Formicivora virgata* LAWRENCE, Ibis, v, April, 1863, 182 (Lion Hill Station, Panamá; coll. G. N. Lawrence); Ann. Lyc. N. Y., viii, 1863, 484 (Lion Hill).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 217 (Chontales, Nicaragua; Lion Hill, Panamá).

*D[rymophila] virgata* RICHMOND, Auk, xvi, Oct., 1899, 354, in text.

[*Formicivora*] *virgata* SHARPE, Hand-list, iii, 1901, 26 (Panamá to Nicaragua).

*Formicivora boucardi virgata* CARRIKER, Ann. Carnegie Mus., vi, 1910, 610 (Costa Rica; crit.; habits).

#### MICRORHOPIAS BOUCARDI CONSOBRINA (Sclater).

##### ECUADORIAN ANTWRN.

Similar to *M. b. virgata*, but adult male with rectrices more broadly tipped with white, the adult female with under parts deep chestnut

<sup>a</sup> Fourteen specimens.

instead of rufous- or tawny-chestnut, the upper parts also slightly darker.

*Adult male*.—Length (skin), 109; wing, 49.5; tail, 46; culmen, 12.5; tarsus, 16.<sup>a</sup>

*Adult female*.—Length (skin), 116–121 (118); wing, 48.5–51.5 (50); tail, 45.5–52 (48.7); tarsus, 16.5; middle toe, 10.<sup>b</sup>

Northwestern Colombia (Rio Truando) to western Ecuador (Babahoyo; Esmeraldas; Balzár Mts.; Sarayacu; Chimbo) and Cayenne.

*Formicivora consobrina* SCLATER, Proc. Zool. Soc. Lond., 1860, 279, 294 (Babahoyo, w. Ecuador; coll. P. L. Sclater); Cat. Am. Birds, 1862, 183 (Babahoyo); Cat. Birds Brit. Mus., xv, 1890, 255 (Babahoyo, Esmeraldas, Balzár Mts., and Sarayacu, Ecuador; Pocune and Medellín, Antioquia, and Bogotá, Colombia; Cayenne).—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1879, 525 (Pocune, Antioquia, Colombia).—BERLEPSCH and TACZANOWSKI, Proc. Zool. Soc. Lond., 1883, 565 (Chimbo, w. Ecuador).

[*Formicivora*] *consobrina* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 72.—SHARPE, Hand-list, iii, 1901, 26.

*D[ymophila] consobrina* RICHMOND, Auk, xvi, Oct., 1899, 354, in text.

*Formicivora quizensis* (not *Thamnophilus quizensis* Cornalia) CASSIN, Proc. Acad. Nat. Sci. Phila., 1860, 190 (Rio Truando, n. w. Colombia).

*Formicivora boucardi* (not of Sclater) SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 216, part (Rio Truando).

### MICRORHOPIAS GRISEA ALTICINCTA (Bangs).

#### SAN MIGUÉL ANTWRÉN.

Similar to *M. g. intermedia*<sup>c</sup> of Colombia and Venezuela, but adult male much darker above (deep grayish sepia, purplish slate color, or deep brownish slate instead of hair brown or broccoli brown) and more extensively black beneath, the adult female darker brown above and much more strongly buffy beneath.

<sup>a</sup> One specimen, from Rio Truando, Colombia.

<sup>b</sup> Two specimens.

| Locality.                                        | Wing. | Tail. | Tar-sus. | Middle toe. |
|--------------------------------------------------|-------|-------|----------|-------------|
| FEMALES.                                         |       |       |          |             |
| One adult female from Rio Truando, Colombia..... | 48.5  | 45.5  | 16.5     | 10          |
| One adult female from Ecuador.....               | 51.5  | [52?] | 16.5     | 10          |

Besides having a longer wing and, apparently, *much* longer tail than the Rio Truando specimen, that from Ecuador has the white tips to the rectrices much more extensive. The specimens examined, however, are all imperfect, and a much better series would be necessary to show whether the Colombian and Ecuadorian birds are really different or not.

<sup>c</sup> See p. 77.



*Adult male*.—Above plain purplish slate color (between slate color and seal brown), deep grayish sepia or deep brownish slate; wings and tail black; anterior portion of lesser wing-covert area white, the remaining lesser coverts, together with middle coverts, with a small terminal roundish spot of white; greater coverts broadly tipped with white, forming a very conspicuous band across wing; remiges narrowly and indistinctly edged (except basally) with grayish brown, the edgings broader on tertials, where sometimes whitish terminally; three outermost rectrices (on each side) broadly tipped with white, this extending much farther on outer than on inner web, the extent of the white greatest (on both webs) on second rectrix; a broad superciliary stripe of white extending from sides of forehead to sides of nape, where confluent with a white area extending from sides of neck to flanks; loreal, suborbital, auricular, and malar regions, chin, throat, chest, breast, abdomen, and under tail-coverts uniform black, the sides and flanks immaculate white outwardly, streaked black and white along exterior margin of the black median area; under wing-coverts black (the under primary coverts white, tipped with black); inner web of remiges broadly edged with grayish white; bill black, paler on tomia; legs and feet grayish black (plumbeous in life?); length (skin), 113–116 (115); wing, 54.5–59 (55.7); tail, 45–49 (46.5); culmen, 14–15 (14.5); tarsus, 20–21.5 (20.3); middle toe, 11–12 (11.5).<sup>a</sup>

*Adult female*.—Above much as in adult male, but the general color decidedly more brownish (deep broccoli brown on back, etc., more grayish brown on pileum and hindneck), the remiges more distinctly edged with brown; sides of head (including superciliary stripe, which is less sharply defined than in adult male) pale grayish buffy or dull buffy whitish, interrupted by a narrow postocular streak of dusky, the suborbital region with very narrow and indistinct bars of dusky, the auricular region with fine shaft-streaks of whitish; chin and upper throat white, passing into buff on chest, this into paler buff on other lower parts, the under tail-coverts (some-

<sup>a</sup> Six specimens.

| Locality.                                                                          | Wing. | Tail. | Culmen. | Tarsus. | Middle toe. |
|------------------------------------------------------------------------------------|-------|-------|---------|---------|-------------|
| MALES.                                                                             |       |       |         |         |             |
| Six adult males from San Miguel Island.....                                        | 55.7  | 46.5  | 14.5    | 20.3    | 11.5        |
| Six adult males ( <i>M. g. intermedia</i> ) from Colombia.....                     | 53.5  | 48    | 14.8    | 20.3    | 11.5        |
| Three adult males ( <i>M. g. margaritensis</i> ) from Margarita I., Venezuela..... | 53.7  | 47.8  | 14.3    | 20      | 11.3        |
| Two adult males ( <i>M. g. intermedia</i> ) from Venezuela (mainland).....         | 54.7  | 49.5  | 14      | 21      | 11.5        |
| One adult male ( <i>M. g. tobacensis</i> ) from Tobago.....                        | 59.5  | 52.5  | .....   | 22      | 12.5        |

times flanks also) and center of abdomen nearly white; bill and feet as in adult male, but mandible pale grayish brown (bluish gray in life?); length (skin), 112–116 (114); wing, 50–52.5 (51.5); culmen, 43–45 (43.8); tarsus, 14–14.5 (14.1); middle toe, 11–11.5 (11.2).<sup>a</sup>

*Immature male*.—Similar to the adult female, but whitish superciliary stripe more distinct, and with throat, chest, and breast intermixed with black.

San Miguél Island, Bay of Panamá.

*Drymophila intermedia* (not *Formicivora intermedia* Cabanis) BANGS, Auk, xviii, Jan., 1901, 30 (San Miguél I., Bay of Panamá).

*Formicivora alticincta* BANGS, Proc. New Engl. Zool. Club, iii, Mar. 31, 1902, 71 (San Miguél I., Bay of Panamá; coll. E. A. and O. Bangs).—THAYER and BANGS, Bull. Mus. Comp. Zool., xlv, 1905, 150 (San Miguél I., crit.).

### Genus *TERENURA* Cabanis and Heine.

*Terenura* <sup>b</sup> CABANIS and HEINE, Mus. Hein., ii, July, 1859, 11. (Type, *Myiothera maculata* Maximilian.)

*Phyllobates* <sup>c</sup> BERTONI, Aves Nuevas del Paraguay, 1901, 142. (Type, *P. erythronotus* Bertoni=*Myiothera maculata* Maximilian.)

Small Formicariidæ (length about 90–100 mm.) with long tail, slender bill, no trace of rictal bristles, and bright coloration.

“This little group leads away from *Formicivora* [*i. e.* *Microrhopias*] to *Psilorhamphus* and *Rhamphocænus*. The bill is hardly longer than in *Formicivora*, but smaller; the nostrils are more elongated, and have a slight membranous operculum as in *Psilorhamphus*. The tail is rather long, thin, and delicate; the tarsi are more like those of *Formicivora*, and show the divisions of the scutes.”<sup>d</sup>

“*Terenura* is a peculiar genus of doubtful affinities, but remarkable for the bright colours of its members. These colours (black, bright yellow, chestnut, and olive), it is true, are all to be found in different species of Formicariidæ, but in *Terenura* alone are they associated in a single bird.

“Cabanis and Heine, who founded the genus, placed it between *Ramphocænus* and *Ellipura* (= *Formicivora*), and in this position it was left by Mr. Sclater. We can not see that it has much in common with either of these forms, which, different as they are, both possess well-defined rictal bristles, not a trace of which can we see in *Terenura*. Mr. Sclater speaks of the presence in the latter genus of a slightly membranous nasal operculum such as is found in *Rhamphocænus*, but the specimens of *Terenura callinota* before us have open nostrils without any overhanging membrane.

<sup>a</sup> Three specimens.

<sup>b</sup> “Von *τῆρον* (zart) und *οὔρα* (Schwanz).” (Cabanis and Heine.)

<sup>c</sup> *φύλλον*, a leaf; *βάτης*, one who treads or covers; a climber. (Bertoni.)

<sup>d</sup> Sclater, Cat. Birds Brit. Mus., xv, 1890, 257.

"On the whole, and in the absence of any information as to the habits of any species of *Terenura*, we are inclined to place the genus near *Myrmotherula*, notwithstanding the difference of coloration and the much longer tail.

"The bill is longer than that of *Myrmotherula surinamensis*, but is otherwise very similar. The wings are decidedly longer and less rounded. The tarsi are covered behind with large scutella, the sutures of which are, however, rather indefinite.

"Four or five species constitute the genus *Terenura*, all more or less rare birds. These are distributed over a wide area of Tropical America—one or two in Southeastern Brazil, one in Guiana, one in Eastern Ecuador, and *T. callinota*, a western and northwestern bird the range of which is given below"<sup>a</sup> [Veragua to Peru].

### TERENURA CALLINOTA (Sclater).

#### RUFIOUS-RUMPED ANTWRN.

*Adult male*.—Above greenish olive; cap black; lores and sides of head whitish; lower back bright chestnut; wings and tail blackish, with olivaceous edgings; wing-coverts black, broadly tipped with white; bend of wing and adjoining coverts bright yellow; beneath pale greenish yellow; throat and breast pale cinereous; under wing-coverts sulphur-yellow; whole length 4 inches, wing 2.2, tail 1.7.<sup>b</sup>

Western Panamá (Calobre, Verágua) through Colombia (Bogotá) and Ecuadór (Nanegál; Pallatanga) to central Peru (Ropaybamba).

*Formicivora callinota* SCLATER, Proc. Zool. Soc. Lond., 1855, 89, pl. 96 (Bogotá, Colombia; coll. Brit. Mus.,) 147 (Bogotá); 1858, 242 (Bogotá).

*Terenura callinota* TACZANOWSKI, Proc. Zool. Soc. Lond., 1874, 530 (Ropaybamba, centr. Peru); Orn. du Pérou, ii, 1884, 52.—TACZANOWSKI and BERLEPSCH, Proc. Zool. Soc. Lond., 1885, 118 (Pallatanga, Ecuadór).—SCLATER, Cat. Birds Brit. Mus., xv, 1890, 257 (Calobre, Verágua; Bogotá; Nanegál, Ecuador).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 213.—BERLEPSCH and STOLZMANN, Proc. Zool. Soc. Lond., 1902, 58 (Ropaybamba, Peru).

[*Terenura*] *callinota* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 72.—SHARPE, Hand-list, iii, 1901, 27.

### Genus RAMPHOCÆNUS Vieillot.

*Ramphocænus* <sup>c</sup> VIEILLOT, Nouv. Dict. d'Hist. Nat., xxiv, 1818, 112 (diagnosis but no type given). *Ramphocænus* Vieillot, Nouv. Dict. d'Hist. Nat., xxix, 1819, 5. (Type, *R. melanurus* Vieillot.)

*Rhamphocænus* (emendation) STRICKLAND, Ann. Mag. N. H., vi, 1841, 421.

*Acontistes* SUNDEVALL, Kgl. Vet.-Ak. Handl., 1835 (1836), 95. (Type, *Ramphocænus melanurus* Vieillot.)

*Scolopacinus* BONAPARTE, Proc. Zool. Soc. Lond., 1837, 119. (Type, *S. rufiventris* Bonaparte.)

<sup>a</sup> Salvin and Godman, Biol. Centr.-Am., Aves, ii, 1892, 213.

<sup>b</sup> Sclater, Cat. Birds Brit. Mus., xv, 1890, 257, 258.

<sup>c</sup> ῥαμφός, rostrum, κανός, novus. (Vieillot.)



Very small Formicariidæ (length about 120–135 mm.) with long, slender bill (longer than head), long, slender tarsi (nearly as long as exposed culmen) and with tail four-fifths as long as wing.

Bill very long (longer than head), straight, and slender, its width at frontal antiæ decidedly greater than its depth at same point and equal to about one-fourth the distance from nostril to tip of maxilla; culmen sharply ridged, straight, the extreme end abruptly and rather strongly decurved, the tip of maxilla very minutely uncinatè; maxillary tomium faintly concave for anterior half or more, very faintly (obsoletely) notched subterminally; mandibular tomium straight, faintly decurved terminally, without trace of subterminal notch, the tip of mandible very slightly decurved; gonys nearly straight, very slightly prominent basally. Nostril exposed, widely separated from feathering of latero-frontal antiæ, narrow, longitudinal, overhung by a broad, convex operculum. Rictal bristles distinct, but rather few and slender; feathers of chin without terminal setæ. Wing moderate or relatively rather large, with longest primaries extending slightly but decidedly beyond secondaries; fifth, sixth, and seventh primaries longest, the tenth (outermost) less than half as long as longest, the ninth much shorter than secondaries. Tail about four-fifths as long as wing, graduated (graduation less than distance from nostril to tip of maxilla), the rectrices (10) rather narrow, rounded terminally. Tarsus about as long as bill from frontal antiæ, two-fifths as long as wing, slender, the scutella of acrotarsium fairly distinct, those of the planta tarsi undivided; middle toe, with claw, about two-thirds as long as tarsus; outer toe, without claw, reaching to beyond middle of subterminal phalanx of middle toe, the inner toe decidedly shorter; hallux about as long as inner toe but much stouter; basal phalanx of middle toe wholly united to both outer and inner toes, the second phalanx partly united to outer toe; claws moderate in size and curvature, that of the hallux shorter than its digit. Plumage full, soft, and blended, that of rump and flanks elongated, more lax or fluffy; feathers of pileum not elongated.

*Coloration*.—Above plain brownish (back, etc., sometimes more grayish), the tail blackish, with or without whitish tip to rectrices; beneath whitish, more or less strongly buffy or rufescent laterally; sexes alike.

*Range*.—Guatemala to southeastern Brazil. (Four species.)

#### RAMPHOCÆNUS RUFIVENTRIS RUFIVENTRIS (Bonaparte).

##### NORTHERN LONG-BILLED ANTWREN.

*Adults (sexes alike)*.—Pileum and hindneck plain olive-brown (between prouts brown and raw umber); rest of upper parts (except tail) plain deep grayish olive or olive-slaty, the concealed portion of

wing-feathers darker; tail dull slate-black or blackish slate, the three outer rectrices (on each side) with an apical or subapical area of dull white, this most developed on inner web of two outermost, which have a narrow longitudinal area of dusky on terminal or subterminal portion of outer web; sides of head and neck plain cinnamon or russet, broken by an indistinct postocular streak of olive-brownish; chin and throat white, more or less broken by partly exposed dusky basal portion of feathers; rest of under parts plain buff, or pinkish buff, deepest (sometimes nearly ochraceous-buff) laterally, paler medially (sometimes nearly white on abdomen); thighs mostly dusky olive-gray; under wing-coverts pale cream buff or buffy white; inner webs of remiges edged with white or buffy white; maxilla horn brown (sometimes darker terminally), mandible much paler (pale bluish gray to flesh color in life); iris brown; legs and feet horn color (bluish gray or grayish blue in life).

*Adult male*.—Length (skins), 109–127 (120); wing, 46–54.5 (51.2); tail, 36.5–43.5 (40.9); culmen, 22–26 (24); tarsus, 20–21.5 (20.9); middle toe, 10.5–12 (11.1).<sup>a</sup>

*Adult female*.—Length (skins), 105–119 (113); wing, 45.5–53 (49.2); tail, 36–41 (38.6); culmen, 20–24.5 (23.1); tarsus, 20–22 (21.3); middle toe, 11–11.5 (11.2).<sup>b</sup>

*Young*.—Essentially like adults, but back, rump, etc., soft grayish brown (nearly concolor with pileum and hindneck), and under parts pale grayish brown, approaching dull buffy whitish on throat and abdomen.

Southeastern Mexico, in States of Vera Cruz (Playa Vicente; Buena Vista; San Andrés Tuxtla), Oaxaca (mountains near Santo Domingo),

<sup>a</sup> Eighteen specimens.

<sup>b</sup> Sixteen specimens.

| Locality.                                                         | Wing. | Tail. | Culmen. | Tarsus. | Middle toe. |
|-------------------------------------------------------------------|-------|-------|---------|---------|-------------|
| MALES.                                                            |       |       |         |         |             |
| Two adult males from southern Mexico.....                         | 50    | 40    | 22      | 21.2    | 10.7        |
| Two adult males from Chiapas and Guatemala.....                   | 50.7  | 43    | 24.5    | 20.7    | 11.2        |
| One adult male from Honduras.....                                 | 54    | 40    | 26      | 21      | 11          |
| One adult male from British Honduras.....                         | 46    | 42    | 24      | 21      | 10.5        |
| Ten adult males from Nicaragua (4) and Costa Rica (6).....        | 51.7  | 41    | 24      | 20.9    | 11.3        |
| Two adult males from Panamá (line of railway).....                | 51.5  | 39.2  | 23.2    | 20.7    | 10.7        |
| Four adult males ( <i>R. r. sanctæ-martæ</i> ) from Colombia..... | 51.6  | 44.5  | 25.1    | 21.9    | 11.4        |
| FEMALES.                                                          |       |       |         |         |             |
| Two adult females from southern Mexico (Vera Cruz).....           | 48.2  | 39.2  | 24      | 21      | 11          |
| One adult female from Chiapas.....                                | 49    | 37.5  | 23      | 22      | 11.5        |
| Two adult females from British Honduras.....                      | 47.5  | 39.5  | 22.5    | 21      | 11          |
| Ten adult females from Nicaragua (3) and Costa Rica (7).....      | 49.4  | 38.4  | 23.1    | 20.8    | 11.2        |
| One adult female from Panamá (Veragua).....                       | 51.5  | 39    | .....   | 22      | 11          |
| One adult female ( <i>R. r. sanctæ-martæ</i> ) from Colombia..... | 47    | 38    | 24.5    | 22      | 12          |

and Chiapas (Palenque; San Benito) and southward through Guatemala (Cobán; Choctúm; Chiséc; Lanquín; Retalhuleu; Los Amates, Yzabál), British Honduras (Orange Walk; Cayo; near Soldiers Creek; near Manatee Lagoon), Honduras (Truxillo), Salvadór (La Libertád; Volcan de San Miguél), Nicaragua (Chinandega; Greytown; Los Sábalos; Sucuyá; Rio Escondido), and Costa Rica (Orosí; Lagarto; Bebedero; Miravalles; Pozo Azul de Pirris; Pozo de Térraba; Pozo del Pitál; Pozo del Rio Grande; Paso Real; Boruca; El Hogár; Carrillo; Guácimo; Cuábres; Laguária; Santa Maria de Dota; Tenório; El General; Bolsón) to Panamá (Santa Fé de Verágua; Calobre; Bugaba; Lion Hill; Panamá; Sabana de Panamá).

*Scolopacinus rufiventris* BONAPARTE, Proc. Zool. Soc. Lond., 1837, 119 (Guatemala; coll. Velasquez).

*R[hamphocænus] rufiventris* GRAY and MITCHELL, Gen. Birds, i, March, 1847, 157, pl. 47, fig. 2.

*Rhamphocænus rufiventris* SCLATER, Proc. Zool. Soc. Lond., 1857, 202 (San Andrés Tuxtla, Vera Cruz); 1858, 244 (monogr.); Cat. Am. Birds, 1862, 184 (Choctúm, Guatemala); Ibis, 1883, 95, part (Guatemala to Panamá; descr.; crit.); Cat. Birds Brit. Mus., xv, 1890, 261, part (Cobán, Choctúm, Chiséc, Lanquín, and Retalhuleu, Guatemala; Bebedero, Costa Rica; Bugaba, Calobre, and Santa Fé de Verágua, Panamá).—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1864, 356 (Panamá; crit.).—NUTTING, Proc. U. S. Nat. Mus., vi, 1883, 386 (Sucuyá, Nicaragua), 405 (Los Sábalos, Nicaragua).—RIDGWAY, Proc. U. S. Nat. Mus., x, 1888, 581 (Truxillo, Honduras).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 219, part (San Andrés Tuxtla and Playa Vicente, Vera Cruz; Orange Walk, Brit. Honduras; Choctúm, Chiséc, Lanquín, and Retalhuleu, Guatemala; Truxillo, Honduras; La Libertád and Volcan de San Miguél, Salvadór; Chinandega, Sucuyá, Los Sábalos, and Greytown, Nicaragua; Bebedero, Costa Rica; Bugaba, Santa Fé de Verágua, Calobre, and Lion Hill, Panamá).—THAYER and BANGS, Bull. Mus. Comp. Zool., xlv, 1906, 217 (Sabana de Panamá).—DEARBORN, Pub. 125, Field Mus. Nat. Hist., 1907, 109 (Los Amates, Guatemala).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 611 (Costa Rica; habits).

[*Rhamphocænus*] *rufiventris* SHARPE, Hand-list, iii, 1901, 27, part (s. Mexico to Panamá).

[*Rhamphocænus*] *rufiventer* HEINE and REICHENOW, Nomencl. Mus. Hein. Orn., 1890, 126, part (Cobán, Guatemala).

*Ramphocænus rufiventris* SCLATER, Proc. Zool. Soc. Lond., 1859, 383 (Playa Vicente, Vera Cruz; crit.).—SALVIN and SCLATER, Ibis, 1860, 399 (Choctúm and Lanquín, Guatemala).—LAWRENCE, Ann. Lyc. N. Y., viii, 1863, 484 (Lion Hill, Panamá); viii, 1865, 182 (Greytown, Nicaragua).—SALVIN, Proc. Zool. Soc. Lond., 1867, 145 (Santa Fé de Verágua, Panamá); 1870, 195 (Calobre and Bugaba, Panamá); Ibis, 1869, 319 (Bebedero de Nicoya, Costa Rica).—BOUCARD, Ann. Soc. Linn. Lyon, 1878, 39 (Guatemala).—RICHMOND, Proc. U. S. Nat. Mus., xvi, 1893, 501 (Greytown and Rio Escondido, Nicaragua; habits).—UNDERWOOD, Ibis, 1896, 440 (Volcan de Miravalles, Costa Rica).—LANTZ, Trans. Kansas Acad. Sci. for 1896-97 (1899), 221 (Cayo, Brit. Honduras).

[*Ramphocænus*] *rufiventris* BONAPARTE, Conspect. Av., i, 1850, 201.

[*Ramphocænus*] *rufiventris* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 73.

*Rhamphocænus rufiventris* CHERRIE, Anal. Inst. Fis.-Geog. Costa Rica, vi, 1893, 19 (Pozo del Pitál, Costa Rica).



## Genus MICROBATES Selater and Salvin.

*Microbates* <sup>a</sup> SCLATER and SALVIN, Nom. Av. Neotr., 1873, 155. (Type, *M. torquatus* Selater and Salvin=*Rhamphocænus collaris* Pelzeln.)

Very small, long-billed, long-legged Formicariidæ, similar in appearance to *Ramphocænus* but with shorter and broader bill, longer tarsi, relatively longer toes (especially the hallux), narrower nostrils with differently shaped operculum, and much shorter tail (only about half, instead of four-fifths) as long as wing.

Bill about as long as head, nearly straight, its width at latero-frontal antiæ much greater than its depth at same point and equal to much more than one-third the distance from nostril to tip of maxilla; culmen sharply ridged, straight for basal half (more or less), then very gradually decurved until near end, where more strongly decurved, the tip of maxilla minutely but distinctly uncinatè; maxillary tomium faintly concave, minutely notched subterminally; mandibular tomium very faintly convex, at least terminally, without trace of subterminal notch; gonys faintly convex basally, straight terminally. Nostril exposed, distinctly separated from feathering of latero-frontal antiæ, narrow, longitudinal (slit-like), overhung by a broad but not convex membraneous operculum. Rictal bristles distinct but rather few and slender; feathers of chin without terminal setæ. Wing rather large, with longest primaries extending slightly beyond secondaries, much rounded; fifth and sixth primaries longest, the tenth (outermost) less than half as long as the longest, the ninth very much shorter than, the eighth about equal to, secondaries. Tail slightly more than half as long as wing, rounded (graduation equal to much less than half the distance from nostril to tip of maxilla), the rectrices (10) rounded at tip. Tarsus very long (decidedly longer than whole culmen, nearly half as long as wing), slender, the acrotarsium faintly scutellate, the planta tarsi completely fused; middle toe, with claw, decidedly shorter than tarsus (equal to or slightly longer than exposed culmen); outer toe, with claw, reaching to about middle of subterminal phalanx of middle toe, the inner toe decidedly shorter; hallux much longer than inner toe (about as long as outer toe), much stouter; basal phalanx of middle toe wholly united to both lateral toes; claws moderate in size and curvature, that of the hallux much shorter than its digit. Plumage full, soft, and blended, that of rump and flanks elongated, more lax or fluffy; feathers of pileum not elongated.

*Coloration*.—Above plain brown; sides of head blackish and white, or tawny; beneath white passing into dusky on flanks and under tail-coverts, the chest crossed by a band of black (*M. collaris*) or under parts of body gray, chest streaked with black and white, and throat white bordered on each side by a black stripe; sexes alike.

<sup>a</sup> “μικρός, parvus et βατής, qui incedit.” (Selater and Salvin.)

*Range*.—Southwestern Costa Rica to Cayenne and Ecuador. (Two species.)<sup>a</sup>

**MICROBATES CINEREIVENTRIS SEMITORQUATUS (Lawrence).**

**HALF-COLLARED ANTWRN.**

*Adults (sexes alike)*.—Pileum and hindneck plain warm-sepia brown; rest of upper parts plain sepia, the edges of greater wing-coverts and secondaries (especially the tertials) more rufescent, the rectrices decidedly darker terminally; sides of head (except lores) plain ochraceous-buff to deep tawny-buff, this color extending more or less over sides of neck; lores dull whitish broken by dusky bristle-like tips to feathers; anterior portion of malar region whitish; chin and throat white or grayish white, the latter bordered along each side by a broad but more or less broken streak of black; rest of under parts plain gray (no. 6 to mouse gray) passing into olive on flanks and under tail-coverts, the upper chest broadly streaked with black; maxilla brownish black with paler tomium, mandible dull whitish (horn color, flesh color, or straw yellowish in life); iris brown; legs and feet horn color (dark bluish gray in life).

*Adult male*.—Length (skins), 95–106 (100); wing, 51–57 (53.9); tail, 26.5–29.5 (27.7); culmen, 17.5–19 (18.1); tarsus, 22–24.5 (23.7); middle toe, 13–14.5 (13.6).<sup>b</sup>

*Adult female*.—Length (skins), 92–101 (96); wing, 50.5–53.5 (51.5); tail, 24–28 (26.3); culmen, 17–19 (18.1); tarsus, 20.5–24.5 (23.1); middle toe, 12.5–13.5 (12.9).<sup>c</sup>

Costa Rica (Jiménez; San Carlos; La Balsa; Río Súcio; Pacuare; Guápiles; Guácimo; Cuábre; El Hogár; Carrillo; La Vijágua) and Panamá (Volcan de Chiriquí; Santiago de Verágua; Lion Hill; Panamá); Colombia (Antioquía)?

*Ramphocænus semitorquatus* LAWRENCE, Ann. Lyc. Nat. Hist. N. Y., vii, 1862, 469, (Lion Hill Station, Panamá; coll. G. N. Lawrence); ix, 1868, 108 ("Valza," *i. e.* La Balsa, Costa Rica; crit.).—SALVIN, Proc. Zool. Soc. Lond., 1867, 145 (Santiago de Verágua, Panamá; crit.); 1870, 195 (Calovévora, Panamá).—FRANTZIUS, Journ. für Orn., 1869, 305 (Costa Rica).—BOUCARD, Proc. Zool. Soc. Lond., 1878, 61 (San Carlos, Costa Rica).—ZELEDÓN, Anal. Mus. Nac. Costa Rica, i, 1887, 115 (Río Súcio, Costa Rica).

<sup>a</sup> I have not seen *M. collaris* (Pelzelin), the type of the genus, and the above generic description is drawn up from *M. cinereiventris* and its subspecies *semitorquatus*.

<sup>b</sup> Thirteen specimens.

<sup>c</sup> Ten specimens, from Costa Rica.

| Locality.                                                 | Wing. | Tail. | Culmen. | Tarsus. | Middle toe. |
|-----------------------------------------------------------|-------|-------|---------|---------|-------------|
| MALES.                                                    |       |       |         |         |             |
| Ten adult males from Costa Rica.....                      | 53.9  | 27.6  | 18.1    | 23.7    | 13.6        |
| Two adult males from western Panamá (Chiriquí).....       | 53.7  | 28.7  | 18.5    | 23      | 13          |
| One adult male from eastern Panamá (line of railway)..... | 54    | 26.5  | .....   | 22.5    | 14          |

- [*Ramphocænus*] *semitorquatus* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 73.  
*Ramphocænus semitorquatus* SCLATER, Ibis, 1883, 96 (Veragua, Panama; Antioquia, Colombia; crit.); Cat. Birds Brit. Mus., xv, 1890, 262 (Veragua; Antioquia).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 219 (La Balsa, Rio Sucio, and San Carlos, Costa Rica; Santiago de Veragua, Calovevora, and Lion Hill, Panama; Colombia).—BANGS, Proc. New Engl. Zool. Club, iii, 1902, 42 (Volcan de Chiriquí, Panama, 1,000-2,000 ft.).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 612 (Caribbean lowlands to 1,500 ft., Costa Rica; habits).  
 [*Ramphocænus*] *semitorquatus* SHARPE, Hand-list, iii, 1901, 28.  
 (?)*Ramphocænus cinereiventris* (not of Sclater?) SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1879, 525 (Antioquia, Colombia; crit.).

### Genus CERCOMACRA Sclater.

*Cercomacra* SCLATER, Proc. Zool. Soc. Lond., 1858, 244. (Type, *Myrmothera cærulescens* Vieillot.)

Medium-sized Formicariidæ (length about 120-135 mm.) with 10 rectrices, distinct rictal bristles, and color plain gray or blackish with concealed white dorsal patch and narrow white tips to wing-coverts (sometimes with broad white tips to lateral rectrices), the adult female of some species brown above, tawny or ochraceous below.

Bill shorter than head, moderately stout, rather broad and depressed basally, its width at frontal antiæ much greater than its depth at same point and equal to at least half the distance from nostril to tip of maxilla; culmen distinctly ridged, straight basally, gently decurved for about terminal half, the tip of maxilla distinctly but not conspicuously uncinatè; maxillary tomium nearly straight, minutely notched subterminally; mandibular tomium nearly straight, minutely (very indistinctly) notched subterminally; gonys faintly convex (more decidedly so basally), moderately ascending terminally. Nostril exposed, posteriorly in contact with feathering of latero-frontal antiæ, small, broadly oval, margined above and posteriorly by very narrow membrane, with an internal tubercle showing within posterior portion. Rictal bristles distinct; feathers of chin and malar apex with distinct terminal setæ. Wing moderate, with longest primaries distinctly longer than secondaries; sixth, fifth and fourth, or fourth and fifth primaries longest, the tenth (outermost) one-half to nearly three-fifths as long as the longest, the eighth about as long as secondaries. Tail as long as wing or a little shorter, graduated (graduation about equal to length of tarsus), the rectrices (10) broad, rounded terminally. Tarsus much longer than whole culmen (a little more than one-third as long as wing), slender, the acrotarsium rather distinctly scutellate, the planta tarsi completely fused; middle toe, with claw, much shorter than tarsus (about as long as exposed culmen); outer toe, without claw, reaching to beyond middle of subterminal phalanx of middle toe, the inner toe



decidedly shorter; hallux about as long as inner toe but much stouter; basal phalanx of middle toe united to outer toe for most of its length, to inner toe by about half its length (or less); claws moderate or rather weak, that of the hallux decidedly shorter than its digit. Plumage full and blended, that of rump and flanks more elongated and lax; feathers of pileum not elongated.

*Coloration*.—Plain gray, slate color, or blackish, the back with a concealed patch of white, the wing-coverts narrowly tipped with white (lateral rectrices sometimes broadly tipped with white); adult females of some species similar but throat streaked with white, of others brown above, tawny or ochraceous below.

*Nidification*.—Nest (of *C. nigricans*) composed of dry grasses, placed in fork of a low bush. Eggs mahogany color, mottled with darker shades of the same color.<sup>a</sup>

*Range*.—Southern Mexico to Cayenne, southeastern Brazil, and Peru. (About 10 species.)<sup>b</sup>

#### KEY TO THE SPECIES AND SUBSPECIES OF CERCOMACRA.

- a. General color black or slaty.
  - b. Lateral rectrices broadly tipped with white. (*Cercomacra nigricans*.)
    - c. General color deep black, the throat without white streaks. (Eastern Panama to Venezuela, Trinidad, and western Ecuador.)
      - Cercomacra nigricans*, adult male (p. 91).
      - cc. General color blackish slate (more blackish beneath), the throat streaked with white.....*Cercomacra nigricans*, adult female (p. 92).
    - bb. Lateral rectrices very narrowly if at all tipped with whitish. (*Cercomacra tyrannina*.)
      - c. Paler (slate color above, slate-gray below). (Eastern Panamá to British Guiana, western Ecuador, etc.)
        - Cercomacra tyrannina tyrannina*, adult male (p. 93).
        - cc. Darker (slate-blackish above, slate color or blackish slate below). (Western Panamá to southeastern Mexico.)
          - Cercomacra tyrannina crepera*, adult male (p. 95).
  - aa. General color olive-brownish above, tawny below.
    - b. Paler.....*Cercomacra tyrannina tyrannina*, adult female (p. 93).
    - bb. Darker.....*Cercomacra tyrannina crepera*, adult female (p. 96).

#### CERCOMACRA NIGRICANS Scater.

##### BLACK TYRANNINE ANTBIRD.

*Adult male*.—Uniform deep black, relieved by white tips to wing-coverts (anterior half of lesser covert area wholly white), broad white edging to outermost feather of alula, and broad white tips to rectrices (except middle pair); feathers of back extensively white beneath surface; under wing-coverts uniform black for anterior half or more, white for posterior portion; inner webs of remiges broadly edged (except terminally) with white; bill black; iris dark brown; legs and

<sup>a</sup> Scater and Salvin, Proc. Zool. Soc. Lond., 1879, 526.

<sup>b</sup> Some of these doubtless only subspecies.

feet dusky (bluish gray or grayish blue in life); length (skins), 132–160 (148); wing, 61.5–71.5 (67.8); tail, 62.5–71 (67.1); culmen, 15.5–19 (17.4); tarsus, 22–24.5 (23.5); middle toe, 12–15 (13.4).<sup>a</sup>

*Immature male*.—Similar to the adult male but black less intense (more or less tinged with slate color), throat broadly streaked with whitish, and (sometimes) chest and breast very narrowly streaked with white; mandible pale horn color (in dried skins).

*Adult female*.—Above plain slate color, the wings and tail marked with white, as in adult male; chin and throat mixed black and white; chest (except laterally) slate-black; breast (except laterally) black, irregularly streaked or otherwise marked with white; rest of underparts (including sides of chest and breast), plain slate-gray, tinged with olive posteriorly; maxilla brownish black with paler tomia; mandible dull whitish (in dried skin); legs and feet horn color (bluish gray in life?); length (skin), 132–145 (138); wing, 60.5–63 (61.6); tail, 52.5–64 (60); culmen, 16–17 (16.5); tarsus, 22–24 (22.8); middle toe, 12–14 (13.1).<sup>b</sup>

Eastern Panamá (Lion Hill; Paraiso Station; Panamá; Sabana de Panamá; San Miguél Island), through Colombia (Remédios, Antioquía; Santa Marta; Bucaramanga; Bogotá; Rio Cauca) to western Ecuadór (Babahoyo; Esmeraldas; Balzár Mountains; Pambilár; Chimbo), Venezuela (Altigracia) and Trinidad.

*Cercomacra nigricans* SCLATER, Proc. Zool. Soc. Lond., 1858, 245 (Santa Marta, Colombia; coll. P. L. Sclater); Cat. Am. Birds, 1862, 184 (Bogotá and Santa Marta, Colombia; Babahoyo, Ecuadór); Cat. Birds Brit. Mus., xv, 1890, 267 (Paraiso Station, Panamá; Santa Marta, Remédios, Bogotá, and Bucaramanga, Colombia; Balzár Mts. Santa Rita, Babahoyo, and Esmeraldas, w. Ecuadór).—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1879, 526 (Antioquía, Colombia).—BERLEPSCH, Journ. für Orn., 1884, 308 (Bucaramanga, Colombia).—TACZANOWSKI and BERLEPSCH, Proc. Zool. Soc. Lond., 1885, 100 (Ecuadór).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 215 (Lion Hill and Paraiso Station, Panamá; Ecuadór; Venezuela; Trinidad; etc.).—BERLEPSCH and HARTERT, Novit. Zool., ix, 1892, 76 (Altigracia, Venezuela; crit.), 612 (Pambilár, n. w. Ecuadór).—THAYER and BANGS,

<sup>a</sup> Seventeen specimens.

<sup>b</sup> Ten specimens.

| Locality.                                             | Wing. | Tail. | Culmen. | Tarsus. | Middle toe. |
|-------------------------------------------------------|-------|-------|---------|---------|-------------|
| MALES.                                                |       |       |         |         |             |
| Seven adult males from eastern Panamá (mainland)..... | 66.6  | 65.9  | 17.4    | 23.3    | 13.5        |
| Seven adult males from San Miguél Island, Panamá..... | 68.4  | 68    | 17.7    | 23.4    | 13.1        |
| Three adult males from Colombia.....                  | 70    | 67.7  | 16.8    | 24      | 13.8        |
| FEMALES.                                              |       |       |         |         |             |
| Two adult females from eastern Panamá (mainland)..... | 61.2  | 60    | 17      | 23.5    | 13.7        |
| Seven adult females from San Miguél Island.....       | 61.9  | 61.1  | 16.4    | 22.6    | 13          |
| One adult female from western Ecuadór.....            | 60.5  | 52.5  | 16.5    | .....   | .....       |

- Bull. Mus. Comp. Zool., xlv, 1905, 150 (San Miguel I., Bay of Panamá); xlv, 1906, 217 (Sabana de Panamá).
- [*Cercomacra*] *nigricans* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 73.—SHARPE, Hand-list, iii, 1901, 29 (Panamá to Ecuador).
- Pyriglena maculicaudis* SCLATER, Proc. Zool. Soc. Lond., 1858, 66, 247 (Trinidad; coll. P. L. Sclater); Cat. Am. Birds, 1862, 185 (do.).—LAWRENCE, Ann. Lyc. N. Y., vii, 1862, 325 (Lion Hill, Panamá).—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1864, 356 (Lion Hill; crit.).
- [*Cercomacra*] *maculicaudis* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 73.
- Cercomacra maculicaudis* SCLATER, Cat. B. Brit. Mus., xv, 1890, 268 (Paraiso Station and Panamá, Panamá; Bogotá; Trinidad).—HARTERT, Novit. Zool., v, 1898, 492 (Chimbo, 1,000 ft., n. w. Ecuador; crit.).—BANGS, Auk, xviii, 1901, 30 (San Miguel I., Bay of Panama).
- Cercomacra maculicauda* BANGS, Proc. New Eng. Zool. Club, ii, 1900, 24 (Loma del León, Panamá).
- Cercomacra maculosa* SCLATER, Proc. Zool. Soc. Lond., 1860, 279 (Babahoyo, w. Ecuador; coll. P. L. Sclater); Cat. Am. Birds, 1862, 184.

### CERCOMACRA TYRANNINA TYRANNINA (Sclater).

#### TYRANNINE ANTBIRD.

*Adult male*.—Above plain slate color, sometimes tinged, more or less, with olive on rump and upper tail-coverts, the feathers of interscapular region darker centrally and extensively white basally; anterior portion of lesser wing-covert area white, the remaining lesser coverts, together with middle and greater coverts, narrowly tipped or terminally margined with white, the alulae (sometimes outermost primaries also) edged with white; rectrices (except middle pair) usually narrowly tipped with white, this preceded by an indistinct bar or area of dusky; under parts plain slate-gray, sometimes tinged with olive posteriorly; under wing-coverts yellowish white, spotted or mottled with dusky on carpal region; inner webs of remiges broadly edged with yellowish white; bill brownish black or blackish brown; iris brown; legs and feet horn color or dusky (bluish gray or grayish blue in life); length (skins), 117–139 (132); wing, 59–64.5 (61.8); tail, 52.5–59 (56.2); culmen, 15.5–17.5 (16.4); tarsus, 21.5–23 (22.6); middle toe, 12.5–13 (12.9).<sup>a</sup>

*Adult female*.—Above plain light olive to grayish olive, the tail browner (sepia), the wings also browner, with outer primaries edged with pale clay color or olive-buff, the wing-coverts (in part, at least) more or less distinctly margined terminally or narrowly tipped with the same or pale fulvous; under parts, including sides of head, plain ochraceous or tawny ochraceous, strongly tinged with olive on flanks, the auricular region also tinged or clouded with olive and with very narrow and indistinct shaft-streaks of paler ochraceous; maxilla dusky brown with paler tomium, mandible dull whitish (in dried skins); legs

<sup>a</sup> Nine specimens.



and feet brownish or horn color (in dried skins); length (skins), 125-141 (131); wing, 57-61 (59.2) tail, 50-60 (54.7); culmen, 15.5-17 (16.3); tarsus, 21.5-23 (21.9); middle toe, 11.5-13 (12.7).<sup>a</sup>

*Immature male*.—Similar to the adult female but ochraceous of under parts more or less intermixed, especially on anterior portions, with slate-gray, and anterior upper parts more grayish.

Eastern Panamá (Lion Hill; Chepo; Panamá; Sabana de Panamá; Cascajal, Coclé; Rio Lara), and southward through Colombia (Bogotá; Rio Cauca; Remédios, Antioquia; Bucaramanga), Venezuela (Munduapo; Maripa; Suapuré; La Union, Caura; Bichaco), British Guiana (Roraima; Camacusa; Bartica Grove; Takutu River), Ecuador (Esmeraldas; Babahoyo; Chimbo; Yaguachi; San Javiér; Pambilár; Foreste del Rio Peripa), to Peru (Ropaybamba; Huambo; Chirimoto) and northern Brazil (Rio Negro; Pará; Obidos).

*Pyrglena tyrannina* SCLATER, Proc. Zool. Soc. Lond., 1855, 90, 147, pl. 98 (Bogotá, Colombia; coll. Brit. Mus.).

*Cercomacra tyrannina* SCLATER, Proc. Zool. Soc. Lond., 1858, 245 (monogr.; Bogotá); 1860, 294 (Esmeraldas, w. Ecuador; crit.); Cat. Am. Birds, 1862, 184, part (Bogotá, Colombia; Esmeraldas, w. Ecuador); Cat. Birds Brit. Mus., xv, 1890, 184, part (Lion Hill, Paraiso, Chepo, and Panamá, Panamá; Esmeraldas, Ecuador; Roraima, Camacusa, Bartica Grove, and Takutu R., Brit. Guiana; Rio Negro and Pará, Brazil).—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1864, 356 (Panamá; crit.); 1879, 526 (Remédios, Antioquia; Colombia; descr. nest and eggs).—PELZELN, Orn. Bras., ii, Abth., 1869, 84.—LAYARD, Ibis, 1873, 387 (Pará, Brazil; food).—TACZANOWSKI, Proc. Zool. Soc. Lond., 1874, 530 (Ropaybamba, centr. Peru); 1882, 31 (Huambo and Chirimoto, n. e. Peru); Orn. du Pérou, ii, 1884, 54.—SALVIN, Proc. Zool. Soc. Lond., 1883, 424 (Panamá); 1885, 427 (Bartica Grove, Camacusa, and Roraima, 3,000 ft., Brit. Guiana).—BERLEPSCH and TACZANOWSKI, Proc. Zool. Soc. Lond., 1883, 565 (Chimbo, w. Ecuador; crit.).—BERLEPSCH, Journ. für Orn., 1884, 308 (Bucaramanga, Colombia; crit.).—TACZANOWSKI and BERLEPSCH, Proc. Zool. Soc. Lond., 1885, 68 (Chimbo, w. Ecuador), 100 (Yaguachi, Ecuador).—SALVADORI and FESTA, Boll. Mus. Zool., etc., Torino, xiv, 1899, no. 339, 7 (Rio Lara, Panamá; crit.); xv, 1899, no. 362, 30 (Foreste del Rio

<sup>a</sup> Eleven specimens.

| Locality.                                   | Wing. | Tail. | Culmen. | Tarsus. | Middle toe. |
|---------------------------------------------|-------|-------|---------|---------|-------------|
| MALES.                                      |       |       |         |         |             |
| Seven adult males from eastern Panamá.....  | 62.3  | 55.6  | 16      | 22.5    | 12.9        |
| Two adult males from Venezuela.....         | 60    | 58.3  | 17.5    | 22.7    | 13          |
| FEMALES.                                    |       |       |         |         |             |
| Five adult females from eastern Panamá..... | 59.6  | 51.9  | 16.1    | 22.2    | 12.6        |
| Six adult females from Venezuela.....       | 58.9  | 57    | 16.5    | 21.7    | 12.7        |

Peripa, w. Ecuador; crit.).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 214, part (Lion Hill, Panama, and Chepo, Panama; Colombia; Ecuador; Peru; Guiana).—BANGS, Proc. New Engl. Zool. Club, ii, 1900, 23 (Loma del Leon, Panama).—HARTERT, Novit. Zool., ix, 1902, 612 (San Javier and Pambilár, n. w. Ecuador; crit.).—BERLEPSCH and HARTERT, Novit. Zool., ix, 1902, 76 (Munduapo, etc., Venezuela).—HELLMAYR, Novit. Zool., xii, 1905, 286 (near Pará, Brazil; crit.); xiii, 1906, 370 (Prata, near Pará); xiv, 1907, 32 (Obidos, Brazil; crit.).—THAYER and BANGS, Bull. Mus. Comp. Zool., xlvii, 1906, 217 (Sabana de Panama).

[*Cercomacra*] *tyrannina* PELZELN, Orn. Bras., iv, Abth., 1870, 419.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 73, part.—SHARPE, Hand-list, iii, 1901, 28, part (Panama; Colombia; Ecuador; Guiana; Amazonia).

*Hypocnemis schistacea* (not of Sclater) LAWRENCE, Ann. Lyc. N. Y., vii, 1862, 325 (Lion Hill, Panama).

*Disythamnus rufiventris* LAWRENCE, Ann. Lyc. Nat. Hist. N. Y., viii, 1867, 131 (Lion Hill, Panama; coll. G. N. Lawrence; =young male; see Salvin, Ibis, 1874, 316).

### CERCOMACRA TYRANNINA CREPERA (Bangs).

#### DUSKY TYRANNINE ANTBIRD.

Similar to *C. t. tyrannina* but adult male with coloration averaging much darker, the general color of upper parts blackish slate to slate-black, under parts slate color to blackish slate; adult female and young male not always distinguishable from those of *C. t. tyrannina*, but usually with color of upper parts darker and more brownish olive, the under parts decidedly deeper tawny.<sup>a</sup>

*Adult male*.—Length (skins), 124–148 (137); wing, 60–67 (63.4); tail, 54.5–62.5 (57.2); culmen, 15–18 (16.6); tarsus, 21.5–24 (22.9); middle toe, 12.5–14 (13.5).<sup>b</sup>

<sup>a</sup> There is much variation in intensity of coloration among specimens from Costa Rica and northward. As a rule, specimens from the Caribbean slope are much darker than those from the Pacific side, and were the differences strictly geographical two well-marked forms could easily be made out; but unfortunately both slate-colored and blackish examples sometimes occur in the same locality, as in eastern Nicaragua (Rio Escondido), Honduras (Rio Blanco and San Pedro Sula), while extreme dark specimens come from Bebedero, northwestern Costa Rica, and light colored ones from British Honduras. A large majority of the specimens from southwestern Costa Rica are so light colored that they could almost be referred to true *C. tyrannina*; but much darker ones occasionally occur there also. Specimens from Venezuela agree exactly with those from Bogotá and Panamá; but two adult males from Reyes and Mapiri, Bolivia, respectively, are quite as dark as the darkest examples of *C. t. crepera*. On the whole, I consider our present understanding of this species, with reference to its geographic variations, far from satisfactory.

<sup>b</sup> Forty-four specimens.

*Adult female*.—Length (skins), 123–148 (134); wing, 57–63 (60); tail, 51–64 (57.4); culmen, 14–17 (15.9); tarsus, 20.5–23.5 (22.4); middle toe, 12.5–14 (13.2).<sup>a</sup>

Southeastern Mexico, in States of Vera Cruz (Playa Vicente; Sochiapa; Santa Lucrécia; Buena Vista), Tabasco (Teapa), and Chiapas (Palenque), and southward through Guatemala (Cobán; Choctúm; sources of Rio de la Pasión; Yzabál; Los Amates, Yzabál; Telemán; Chiséc), British Honduras (Belize; near Manatee Lagoon), Honduras (Omoa; San Pedro; San Pedro Sula; Rio Blanco; La Bomba), Nicaragua (Matagalpa; Los Sábalos; Greytown; Rio Escondido; Sucuyá; San Emilis; 4 leagues south of Lake Manágua) and Costa Rica (Tucurríqui; Pacuare; San Carlos; Jiménez; El Hogár; Guácimo; Guápiles; Carrillo; Turrialba; Guayabo; Angostura; Juan Viñas; Rio Sísola; Talamanca; Naranjo de Cartago; Pozo Azul de Pirrís; Pozo del Rio Grande; Pozo de Térraba; Térraba; Buenos Aires; Boruca; Barranco, Boruca; Tenório; El General; Pigres; Lagarto; Bebedero; Miravalles; La Vijagua; Cerro Santa Maria) to western Panamá (Santa Fé de Verágua; Divala; Bugaba; Mina de Chorchá).

*Cercomacra tyrannina* (not *Pyriglena tyrannina* Sclater) SCLATER, Proc. Zool. Soc. Lond., 1859, 383 (Playa Vicente, Vera Cruz); Cat. Am. Birds, 1862, 184, part (Choctúm, Guatemala; Omoa, Honduras); Cat. Birds Brit. Mus., xv, 1890, 265, part (Chiséc, Choctúm, and sources of Rio de la Pasión, Guatemala; Omoa, Honduras; Tucurríqui, Costa Rica; Santa Fé, Bugaba, and Mina de Chorchá, w. Panamá).—MOORE, Proc. Zool. Soc. Lond., 1859, 55 (Belize, Brit. Honduras; crit.).—SCLATER and SALVIN, Ibis, 1859, 119

<sup>a</sup> Thirty-nine specimens.

| Locality.                                                   | Wing. | Tail. | Culmen. | Tarsus. | Middle toe. |
|-------------------------------------------------------------|-------|-------|---------|---------|-------------|
| MALES.                                                      |       |       |         |         |             |
| Three adult males from southeastern Mexico (Vera Cruz)..... | 63.5  | 60.5  | 16      | 22.5    | 12.8        |
| Ten adult males from Guatemala.....                         | 63.7  | 59    | 16.9    | 22.7    | 13.2        |
| Five adult males from Honduras.....                         | 63.1  | 60.5  | 17.2    | 23      | 13.4        |
| Four adult males from eastern Nicaragua.....                | 62.4  | 58.6  | 16.7    | 23      | 13.2        |
| One adult male from western Nicaragua.....                  | 63    | 58.5  | 17.5    | 22.5    | 13.5        |
| One adult male from British Honduras.....                   | 63    | 55.5  |         |         | 14          |
| Ten adult males from eastern Costa Rica.....                | 63.3  | 56.8  | 16.2    | 23.3    | 13.8        |
| Ten adult males from western Costa Rica.....                | 63.4  | 58.4  | 16.4    | 23.2    | 13.7        |
| FEMALES.                                                    |       |       |         |         |             |
| Two adult females from southeastern Mexico.....             | 61    | 55    | 16      | 21.3    | 13          |
| Nine adult females from Guatemala.....                      | 60.4  | 60.8  | 16.2    | 22.3    | 13.1        |
| Three adult females from British Honduras.....              | 59    | 60.8  | 15      | 22.5    | 13.2        |
| Three adult females from Honduras.....                      | 61.2  | 55.5  | 16.8    | 23      | 13          |
| One adult female from eastern Nicaragua.....                | 57.5  | 52.5  | 17      | 22      | 13          |
| One adult female from western Nicaragua.....                | 58    | 53.5  | 16      | 22.5    | 13          |
| Ten adult females from eastern Costa Rica.....              | 60.2  | 56.4  | 15.6    | 22.8    | 13.4        |
| Ten adult females from western Costa Rica.....              | 59.6  | 56    | 14.2    | 22.3    | 13.2        |



- (Cobán, Guatemala; Belize); Proc. Zool. Soc. Lond., 1870, 837 (San Pedro, Honduras).—SALVIN and SCLATER, Ibis, 1860, 36 (Yzabál, Guatemala).—SALVIN, Proc. Zool. Soc. Lond., 1867, 145 (Santa Fé de Verágua, w. Panamá); 1870, 195 (Mina de Chorchá and Bugaba, w. Panamá).—LAWRENCE, Ann. Lyc. N. Y., ix, 1868, 109 (Angostura, Costa Rica).—FRANTZIUS, Journ. für Orn., 1869, 305 (Costa Rica).—BOUCARD, Proc. Zool. Soc. Lond., 1878, 61 (San Carlos, Costa Rica); Ann. Soc. Linn. Lyon, 1878, 39 (Guatemala).—NUTTING, Proc. U. S. Nat. Mus., vi, 1883, 386 (Sucuyá, Nicaragua), 405 (Los Sábalos, Nicaragua).—ZELEDÓN, Anal. Mus. Nac. Costa Rica, i, 1887, 115 (Pacuare, Jiménez, and Pozo Azúl, Costa Rica).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 214, part (Playa Vicente and Sochiapa, Vera Cruz; Belize, Brit. Honduras; Chiséc, etc., Guatemala; San Pedro, Honduras; Matagalpa, etc., Nicaragua; Tucurriqui, etc., Costa Rica; Bugaba, Mina de Chorchá, and Santa Fé de Verágua, Panamá).—RICHMOND, Proc. U. S. Nat. Mus., xvi, 1893, 501 (Rio Escondido, Nicaragua; habits).—CHERRIE, Expl. Zool. Merid. Costa Rica, 1893, 42 (Lagarto, Boruca, Térraba, and Buenos Aires, s. w. Costa Rica).—UNDERWOOD, Ibis, 1896, 440 (Volcan de Miravalles, Costa Rica).
- [*Cercomacra*] *tyrannina* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 73, part.—SHARPE, Hand-list, iii, 1901, 28, part.
- Cercomacra tyrannina tyrannina* CARRIKER, Ann. Carnegie Mus., v, no. 1, Oct. 1, 1908, 9, in text (s. w. Costa Rica).
- Cercomacra crepera* BANGS, Auk, xviii, Oct., 1901, 365 (Divala, Chiriquí, Panamá; coll. E. A. and O. Bangs).—DEARBORN, Pub. 125, Field Mus. Nat. Hist., 1907, 109 (Los Amates, e. Guatemala; crit.).
- Cercomacra tyrannina crepera* BANGS, Auk, xxiv, 1907, 296 (Boruca, Paso Real, Pozo del Rio Grande, and Barranca, s. w. Costa Rica).—CARRIKER, Ann. Carnegie Mus., v, 1908, 8 (e. Costa Rica; crit.); vi, 1910, 612 (Costa Rica; crit.; habits).—FERRY, Pub. 146, Field Mus. N. H., orn. ser., i, no. 6, 1910, 271 (Guayabo, Costa Rica).

### Genus GYMNOCHLA Sclater.

*Gymnocyhla* SCLATER, Proc. Zool. Soc. Lond., 1858, 274. (Type, *Myiothera nudiceps* Cassin.)

Medium-sized Formicariidæ (length about 140–160 mm.) resembling the larger and stouter species of *Myrmeciza*, but with bill weaker, less compressed anteriorly and less strongly uncinately, the culmen less distinctly ridged; nostril smaller; relatively shorter tarsus (only two-fifths as long as wing), with acrotarsium distinctly scutellate; tail shorter (not more than four-fifths as long as wing), the adult males with loreal and suborbital regions (sometimes whole pileum) naked.

Bill about as long as head, narrowly wedge-shaped in vertical profile (with nearly straight lateral outlines), its width at posterior end of nostrils about equal to its depth at same point and equal to a little less than half the distance from nostril to tip of maxilla; culmen slightly ridged, straight to near tip where abruptly decurved, the point of maxilla slightly or minutely uncinately; tomium straight, with small subterminal notch, that of the mandible less distinct; gonys

strongly convex and prominent basally, faintly convex and ascending terminally. Nostril exposed, small, longitudinally broadly oval, margined above by a narrow extension of the membranous integument of nasal fossa, an internal tubercle showing conspicuously in posterior portion. No trace of rictal bristles, and feathers of chin without terminal setæ. Wing moderate, very much rounded, but longest primaries extending decidedly beyond secondaries; sixth and seventh, fifth and sixth, or fourth, fifth, and sixth primaries longest, the tenth (outermost) between one-half and three-fifths as long as the longest, the eighth slightly longer, the ninth decidedly shorter, than secondaries. Tail about four-fifths as long as wing, much rounded (graduation not greater than length of culmen), the rectrices (12) broad, rounded terminally. Tarsus about two-fifths as long as wing, rather slender, the acrotarsium distinctly scutellate, the planta fused (sometimes indistinctly scutellate on outer side); middle toe, with claw, much shorter than tarsus, but decidedly longer than whole culmen; outer toe, without claw, reaching to or slightly beyond middle of subterminal phalanx of middle toe, the inner toe slightly shorter; hallux shorter than inner toe but much stouter; basal phalanx of middle toe wholly or for much the greater part united to outer toe, about half united to inner toe; claws moderate in size and curvature, that of the hallux decidedly shorter than the digit. Plumage full and blended, that of rump and flanks more lengthened and lax; loreal, rictal, and orbital regions—sometimes forehead and crown also—naked, the crown with sparse hair-like feathers or bristles.

*Coloration*.—Adult males uniform black, the wing-coverts (at least some of the lesser coverts) tipped with white, the back sometimes with a small concealed patch of white; adult females and young males brown above, tawny or rufescent below; bare skin of head light blue in life (in both sexes).

*Range*.—Honduras to Colombia. (Two species.)

#### KEY TO THE SPECIES AND SUBSPECIES OF *GYMNOCICHLA*.

- a. General color black. (*Males*.)
  - b. Forehead, lores, and more or less of crown nude. (*Adult males*.)
    - c. Anterior margin of lesser wing-covert area mostly black; bill black. (*Gymnocichla nudiceps*.)
      - d. Deeper black, the posterior under parts black; smaller under wing-coverts mostly wholly black.
        - e. Smaller (averaging: wing 76.4, tail 57.7, culmen 20.6, tarsus 29.4). (Eastern Panamá and adjacent parts of northwestern Colombia.)  
*Gymnocichla nudiceps nudiceps*, adult male (p. 99).
        - ee. Larger (averaging: wing 78.9, tail 61.7, culmen, 20.9, tarsus 30). (Northwestern Panamá and western Costa Rica.)  
*Gymnocichla nudiceps erratilis*, adult male (p. 101).

dd. Duller black, the posterior under parts blackish slate; smaller under wing-coverts broadly tipped with white. (Coast district of northeastern Colombia.)

*Gymnocichla nudiceps sancta-martæ*, adult male (extralimital).<sup>a</sup>  
cc. Anterior margin of lesser wing-covert area broadly white; bill whitish or light yellowish. (Eastern Costa Rica to eastern Guatemala.)

*Gymnocichla chiroleuca*, adult male (p. 101).

bb. Forehead, lores, and crown feathered. (*Immature males.*)<sup>b</sup>

aa. General color brown above, deep tawny below. (*Adult females.*)

b. Wing-coverts brown, indistinctly tipped with rufous-tawny. (*Gymnocichla nudiceps.*)

c. Slightly paler and smaller (wing averaging 73.6, tail 55.4, culmen 19.7, tarsus 29.2).....*Gymnocichla nudiceps nudiceps*, adult female (p. 99).

cc. Slightly darker and larger (wing averaging 75.1, tail 59.3, culmen 19.9, tarsus 29.4).....*Gymnocichla nudiceps erratilis*, adult female (p. 101).<sup>c</sup>

bb. Wing-coverts blackish, broadly tipped with bright tawny.

*Gymnocichla chiroleuca*, adult female (p. 102).

### GYMNOICHLA NUDICEPS NUDICEPS (Cassin).

#### BARE-CROWNED ANTIBIRD.

*Adult male*.—Uniform black, slightly duller on rump, upper tail-coverts, and posterior under parts, the latter inclining to slate-black; all the wing-coverts margined terminally with white, alulae and outermost primary edged with white, and rectrices (except middle pair) narrowly tipped with white; smaller under wing-coverts uniform black, the under primary coverts slate color or slate-gray, broadly margined with white; inner webs of remiges broadly edged with pale gray or grayish white; naked skin of head bright light blue in life; bill black; iris brown; legs and feet horn color or dusky (bluish gray or grayish blue in life?); length (skins), 143–157 (152); wing, 73.5–80.5 (76.1); tail, 54–60 (57.1); culmen, 19.5–21.5 (20.6); tarsus, 28.5–30.5 (29.6); middle toe, 18–20.5 (18.9).<sup>d</sup>

*Immature male*(= *Myrmelastes corvinus* Lawrence and *M. ceterus* Bangs).—Similar to the adult male but whole pileum feathered (only the loreal and orbital regions being naked) and greater wing-coverts wholly dark sooty brown or sooty black (without white tips).

*Adult female*.—Above plain olive-brown, russet-brown or mummy brown, the wings more rufescent (chestnut-brown), with tips of wing-coverts (rather broadly) deep cinnamon-rufous, rufous-chestnut or deep tawny; tail dark russet-brown or vandyke brown, the rectrices (except middle pair) sometimes (usually?) narrowly tipped with pale

<sup>a</sup> *Gymnocichla nudiceps sancta-martæ* Ridgway, Proc. Biol. Soc. Wash., xxi, Oct. 20, 1908, 194 (Santa Marta, Colombia; coll. U. S. Nat. Mus.).

<sup>b</sup> The different forms distinguished by same characters as those given for adult males (c to cc).

<sup>c</sup> The adult female of *G. nudiceps sancta-martæ* not seen by me.

<sup>d</sup> Eight specimens.



rusty or whitish; interscapulars extensively white basally; under parts plain deep tawny or rufous-tawny to nearly chestnut, the color deepest on chest, palest on abdomen, the flanks tinged with olive; maxilla blackish, becoming more horn colored terminally; mandible horn color, paler (sometimes whitish) terminally; iris brown; legs and feet horn color (bluish gray or grayish blue in life); length (skins), 148–152 (150); wing, 72–76 (73.6); tail, 53.5–57 (55.4); culmen, 19–20.5 (19.7); tarsus, 28–30 (29.2); middle toe, 18–19.5 (18.8).<sup>a</sup>

Eastern Panamá (Loma del León; Panamá) and adjacent portion of northwestern Colombia (Rio Atrato).

*Myiothera nudiceps* CASSIN, Proc. Ac. Nat. Sci. Phila., 1850, 106, pl. 6 (Isthmus Panamá; coll. Acad. Nat. Sci. Phila.).

*Pyriglena nudiceps* SCLATER, Proc. Zool. Soc. Lond., 1854, 113, part (Isthmus Panamá); 1857, 47, in text.

*Gymnocichla nudiceps* SCLATER, Proc. Zool. Soc. Lond., 1858, 274 (monogr.); Cat. Birds Brit. Mus., xv, 1890, 272, part (Lion Hill; Panamá).—LAWRENCE, Ann. Lyc. N. Y., vii, 1862, 295 (Lion Hill; Panamá).—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1864, 356 (Lion Hill, crit.; descr. female).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 223, part (Lion Hill, Panamá).—BANGS, Proc. New Engl. Zool. Club, ii, 1900, 24 (Lion Hill, Panamá).

[*Gymnocichla*] *nudiceps* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 73, part.—SHARPE, Hand-list, iii, 1901, 32, part.

*G*[*ymnocichla*] *nudiceps nudiceps* RIDGWAY, Proc. Biol. Soc. Wash., xxi, 1908, 194, in text.

*Pithys rufigularis* (not of Sclater, ex *Turdus rufigula* Boddaert) LAWRENCE, Ann. Lyc. N. Y., vii, 1862, 293 (Lion Hill, Panamá; =adult female).

*Myrmeciza ferruginea* LAWRENCE, Ann. Lyc. Nat. Hist. N. Y., vii, 1862, 470 (Lion Hill, Panamá; =adult female; see Sclater and Salvin, Proc. Zool. Soc. Lond., 1864, 356).

*Myrmelastes corvinus* (not *Thamnophilus corvinus* Gould) LAWRENCE, Ibis, v, April, 1863, 182 (Lion Hill, Panamá Railway; coll. G. N. Lawrence); Ann. Lyc. N. Y., viii, 1863, 485 (Lion Hill).

*Myrmelastes lawrencii*, part, SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 226, part (Lion Hill, Panamá).

<sup>a</sup> Six specimens.

| Locality.                                                                     | Wing. | Tail. | Culmen. | Tarsus. | Middle toe. |
|-------------------------------------------------------------------------------|-------|-------|---------|---------|-------------|
| MALES.                                                                        |       |       |         |         |             |
| Eight adult males from eastern Panamá.....                                    | 76.1  | 57.1  | 20.5    | 29.6    | 18.9        |
| Two adult males ( <i>G. n. erratilis</i> ?) from western Panamá (Divala)..... | 77.7  | 60.5  | 21.2    | 28.7    | 19          |
| Ten adult males ( <i>G. n. erratilis</i> ) from southwestern Costa Rica.      | 78.9  | 61.7  | 20.9    | 30      | 19.4        |
| One adult male ( <i>G. n. sanctæ-martæ</i> ) from Colombia.....               | 81    | 60.5  | 21.5    | 30      | 18.5        |
| FEMALES.                                                                      |       |       |         |         |             |
| Six adult females from eastern Panamá.....                                    | 73.6  | 55.4  | 19.7    | 29.2    | 18.8        |
| Ten adult females ( <i>G. n. erratilis</i> ) from southwestern Costa Rica.    | 75.1  | 59.3  | 19.9    | 29.4    | 18.9        |
| One adult female ( <i>G. n. sanctæ-martæ</i> ) from Colombia.....             | 74    | 58    | 18.5    | 30.5    | 19.5        |

*Myrmelastes ceterus* BANGS, Proc. New Engl. Zool. Club, ii, Sept. 20, 1900, 25 (Loma del León, i. e., Lion Hill, Panamá; coll. E. A. and O. Bangs).  
 [*Myrmelastes*] *ceterus* SHARPE, Hand-list, iii, 1901, 32.

### GYMNOCICHLA NUDICEPS ERRATILIS Bangs.

#### COSTA RICAN BARE-CROWNED ANTIBIRD.

Similar to *G. n. nudiceps* but averaging slightly larger, the adult female averaging more intense in coloration.<sup>a</sup>

*Adult male*.—Length (skins), 147–163.5 (153.5); wing, 75.5–83 (78.9); tail, 59.5–64.5 (61.7); exposed culmen, 20–22 (20.9); tarsus, 29.5–30.5 (30); middle toe, 19–20 (19.4).<sup>b</sup>

*Adult female*.—Length (skins), 137.5–153 (148); wing, 72.5–77.5 (75.1); tail, 56–62 (59.3); exposed culmen, 19–21 (19.9); tarsus, 29–30 (29.4); middle toe, 18–19.5 (18.9).<sup>b</sup>

Southwestern Costa Rica (Boruca; Pozo del Rio Grande, Boruca; Térraba; Paso Real de Térraba; Buenos Aires; El General; Pigres), and northwestern Panamá (Divala;<sup>c</sup> Mina de Chorchá; Bugaba; Chitra)?

(?) *Gymnocichla nudiceps* (not *Myiothera nudiceps* Cassin?) SALVIN, Proc. Zool. Soc. Lond., 1870, 195, part (Mina de Chorchá and Bugaba, Veragua, Panamá; crit.).—SCLATER, Cat. Birds Brit. Mus., xv, 1890, 272, part (Mina de Chorchá, Bugaba, Chiriquí, and Chitra, Panamá).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 223, part (Chiriqui, Bugaba, Mina de Chorchá, and Chitra, Panamá).

*Gymnocichla nudiceps* (not *Myiothera nudiceps* Cassin) CHERRIE, Expl. Zool. Merid. Costa Rica, 1893, 42 (Boruca, Térraba, and Buenos Aires, s. w. Costa Rica; crit.).

*Gymnocichla nudiceps erratilis* BANGS, Auk, xxiv, no. 3, July, 1907, 297 (Boruca, s. w. Costa Rica; coll. E. A. and O. Bangs).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 620 (Costa Rica; crit.; habits).

### GYMNOCICHLA CHIROLEUCA Sclater and Salvin.

#### BARE-FRONTED ANTIBIRD.

Similar to *G. nudiceps* but adult male with bend of wing white and white tips to wing-coverts broader, much less of concealed white on back, and bill paler (plumbeous in life, whitish—at least terminally—in dried skins); adult female with wing-coverts very much darker, contrasting much more strongly with their tawny or rufescent tips.

*Adult male*.—General color uniform black; bend of wing, broad tips to all the wing-coverts, and broad edging to outermost feather of alula and outermost primary, white; feathers of anterior portion

<sup>a</sup> The difference in coloration of females is by no means constant, but the average difference is very obvious.

<sup>b</sup> Ten specimens.

<sup>c</sup> Having only adult males from that locality, I am not able to determine whether specimens of this species from Divala belong to the present form or true *G. nudiceps*. No specimens from other localities in Chiriqui have been seen by me.

of interscapular area with more or less of white at base; lateral rectrices sometimes narrowly tipped with white; bare skin of head pale blue (azure or campanula blue back of eyes); bill, tarsi, feet, and claws plumbeous; iris dark red;<sup>a</sup> length (skins), 147–170 (160); wing, 76.5–81.5 (79); tail, 58–64 (60.9); culmen 20–23 (21.7); tarsus, 29–32 (31.1); middle toe, 18.5–20.5 (19.4).<sup>b</sup>

*Immature male* (= *Myrmelastes lawrencii* Salvin and Godman).—Similar to the adult male but entire pileum feathered (only the loreal and orbital regions being naked) and greater wing-coverts wholly black.

*Adult female*.—Pileum and hindneck rufescent brown (nearly mummy brown), somewhat more rufescent anteriorly and laterally; back, scapulars, and rump plain deep olive, the upper tail-coverts more rufescent; tail dark warm-sepia brown; lesser wing-coverts and margin of wing deep tawny-ochraceous, the former with concealed base of feathers dusky; middle coverts black, broadly and sharply tipped with tawny-ochraceous; greater coverts bistre brown, passing into black subterminally, their tips sharply and rather broadly tawny-ochraceous; remiges russet-brown or vandyke brown, the edges of outermost primaries lighter (more russet); sides of head and neck and general color of under parts, including under wing-coverts, plain bright cinnamon-rufous or rufous-tawny, somewhat paler on abdomen and passing into olive-tawny on flanks and under tail-coverts; “naked skin of head pale blue (azure back of eye); bill, tarsi, feet, and claws plumbeous; iris dark red;”<sup>c</sup> length (skins), 151–163 (156); wing, 71–79 (75.9); tail, 59–60.5 (59.4); culmen, 19.5–21.5 (21.1); tarsus, 28.5–30.5 (29.6); middle toe, 19–19.5 (19.1).<sup>d</sup>

*Young male*.—Similar to the adult female, but pileum and hindneck duller and less rufescent brown, middle and greater wing-coverts without ochraceous or tawny tips, and the tawny-ochraceous which

<sup>a</sup> C. W. Richmond.

<sup>b</sup> Ten specimens.

<sup>c</sup> C. W. Richmond, manuscript.

<sup>d</sup> Six specimens.

| Locality.                                | Wing. | Tail. | Culmen. | Tarsus. | Middle toe. |
|------------------------------------------|-------|-------|---------|---------|-------------|
| MALES.                                   |       |       |         |         |             |
| Six adult males from Costa Rica.....     | 76.2  | 61.1  | 21.8    | 31.6    | 19.8        |
| Three adult males from Nicaragua.....    | 78.8  | 60.8  | 21.7    | 30.8    | 19.3        |
| One adult male from Guatemala.....       | 76.5  | 60    | 21.5    | 29      | 18.5        |
| FEMALES.                                 |       |       |         |         |             |
| Three adult females from Costa Rica..... | 75.7  | 59.5  | 20.8    | 30      | 19.2        |
| One adult female from Nicaragua.....     | 76    | 59    | 21.5    | 30.5    | 19          |
| One adult female from Honduras.....      | 76.5  | 59    | 21      | 28.5    | 19          |
| One adult female from Guatemala.....     | 76    | 60    | 21.5    | 29      | 19          |



covers solidly the exposed surface of lesser wing-covert area paler. (Older specimens showing admixture of black, according to age.)

*Immature female*.—Similar to the immature male.

Northwestern Panamá (Mina de Chorchá, Chiriquí); eastern Costa Rica (Tucurríqui; Jiménez; "San José;" El Hogár; Cuábre; Guápiles; Río Sísola; La Cristina; Talamanca), through Nicaragua (Matagalpa; Río Escondido; San Emilis, Lake Nicaragua) and Honduras (Omoa; Santa Ana) to Guatemala (Los Amates, Yzabál).

*Gymnocichla nudiceps* (not *Myiothera nudiceps* Cassin) MOORE, Proc. Zool. Soc. Lond., 1859, 55 (Omoa, Honduras; habits).—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1859, 119 (Omoa).—LAWRENCE, Ann. Lyc. N. Y., ix, 1868, 109 (Tucurríqui, Costa Rica).—FRANTZIUS, Journ. für Orn., 1869, 305 (Costa Rica).

*Gymnocichla chiroleuca* SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1869, 417 (Tucurríqui, Costa Rica; coll. Salvin and Godman).—SCLATER, Cat. Birds Brit. Mus., xv, 1890, 272 (Tucurríqui, Costa Rica; Honduras).—RIDGWAY, Proc. U. S. Nat. Mus., xiv, 1891, 469 (Santa Ana, Honduras; descr. female and young male).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 224.—RICHMOND, Proc. U. S. Nat. Mus., xvi, 1893, 501 (Río Escondido, Nicaragua; habits, notes, etc.).—DEARBORN, Pub. 125, Field Mus. Nat. Hist., 1907, 109 (Los Amates, Guatemala).

*Gymnocichla chiroleuca* SALVIN, Ibis, 1869, 314, 318.

[*Gymnocichla*] *chiroleuca* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 73.—SHARPE, Hand-list, iii, 1901, 32.

*Gymnocichla cheiroleuca* CARRIKER, Ann. Carnegie Mus., vi, 1910, 621 (Caribbean lowlands to about 1,000 ft., Costa Rica; habits).

*Myrmelastes lawrencii* SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, sig. 29, March, 1892, 226 (Mina de Chorchá, Chiriquí, Panamá; coll. Salvin and Godman).

*Myrmelastes lawrencei* RICHMOND, Proc. U. S. Nat. Mus., xvi, 1893, 502 (Río Escondido, Nicaragua).

[*Myrmelastes*] *lawrencei* SHARPE, Hand-list, iii, 1901, 32.

### Genus MYRMECIZA Gray.

*Myrmeciza* GRAY, List Gen. Birds, 1841, 34. (Type, *Myrmothera longipes* Vieillot.)

*Myrmonax* <sup>a</sup> CABANIS, in Wiegmann's Archiv für Naturg., xiii, pt. i, 1847, 210. (Type, *Myrmothera longipes* Vieillot.)

*Myrmelastes* SCLATER, Proc. Zool. Soc. Lond., 1858, 274. (Type, *M. plumbeus* Sclater.)

Medium-sized Formicariidæ (length about 130–165 mm.) resembling *Gymnocichla* but loreal and suborbital regions feathered (only the postocular and rictal regions naked), tail relatively shorter (two-thirds to three-fourths, instead of four-fifths, as long as wing), the adult males not black (or else without white tips to wing-coverts).

Bill shorter than head, rather slender to moderately stout, its width at frontal antiæ equal to or slightly greater than its depth at same point and equal to nearly if not quite half the distance from nostril to tip of maxilla; culmen distinctly (sometimes rather sharply)

<sup>a</sup> *μύρμος* = *μύρμηξ*, Ameise; *ἄναξ*, Herrscher, tyrannus. (Cabanis.)

ridged, straight or nearly so for basal half or more, then gradually more and more decurved to the distinctly uncinat tip of maxilla; tomia nearly straight, minutely but distinctly notched subterminally (more slightly so on mandibular tomium); gonys distinctly convex and prominent basally, gently convex or nearly straight and ascending terminally, the tip of mandible forming a minute slightly recurved point. Nostril exposed, separated more or less widely from feathering of latero-frontal antiæ, longitudinally oval, with an internal tubercle showing distinctly within posterior portion, margined above by a more or less broad extension of the membranous integument of the nasal fossa. Rictal bristles absent; feathers of chin, etc., without distinct terminal setæ, but their webs semi-decomposed, bristle-like. Wing moderate, much rounded, the longest primaries projecting very little (sometimes not at all) beyond secondaries; fourth, fifth and sixth, fifth, sixth and seventh, or fifth and sixth, primaries longest, the tenth (outermost) a little more than half (*M. plumbea*) to two-thirds (*M. boucardi*) as long as the longest, the eighth slightly shorter to decidedly longer than secondaries. Tail two-thirds to slightly more than three-fourths as long as wing, strongly rounded (graduation equal to less than distance from nostril to tip of maxilla), the rectrices (12) rather narrow to rather broad (*M. plumbea*), rounded terminally. Tarsus much longer than whole culmen, two-fifths as long as wing or a little more, the acrotarsium distinctly scutellate, the planta fused (nonscutellate); middle toe, with claw, much shorter than tarsus; outer toe, without claw, not reaching to middle of subterminal phalanx of middle toe, the inner toe slightly shorter; hallux about as long as inner toe, but much stouter; basal phalanx of middle toe united to outer toe for much the greater part, to inner toe for not more than basal half (for less than basal half in *M. boucardi*); claws moderate in size and curvature, much compressed, that of the hallux decidedly shorter than its digit. Plumage full and blended, that of rump (and to a less extent that of flanks also) much lengthened, more lax; feathers of pileum short and blended in *M. plumbea*, more elongated and distinctly outlined in other species; rictal and postocular regions naked, the loreal and frontal regions more or less scantily feathered.

*Coloration*.—(I) Adult males uniform black, including outer surface of wings; adult females brown, the head more dusky. (II) Adult male plain slate color, the wing-coverts spotted with white; adult female similar but under parts bright tawny. (III) Adult males brown above, the head and neck slate color or olive, the wing-coverts with or without white spots; under parts gray or slate color, darker (sometimes black) on throat, the flanks brownish; adult females duller, brownish or rufescent below, or (in *M. læmosticta*) similar to the male but the black throat barred with white. (IV) Adult males

bright cinnamon-rufous, more grayish (sometimes wholly gray) on pileum and hindneck, the wing-coverts sometimes spotted with black; sides of head, throat, and chest black, rest of under parts white medially, grayish and fulvescent laterally; adult females similar but without black on under parts.

*Range*.—Nicaragua to western Ecuadór, Amazon Valley, and British Guiana. (About six species.)<sup>a</sup>

KEY TO THE SPECIES OF MYRMECIZA.

- a. Under parts partly black.
- b. Back, wings, etc., brown or cinnamon-rufous.
- c. Abdomen white; back, wings, etc., cinnamon-rufous or rufous-chestnut. (*Myrmeciza boucardi*.)
- d. Whole chest gray.
- e. Pileum and hindneck wholly gray; no black spots or bars on wing-coverts. (Central Colombia.)

*Myrmeciza boucardi boucardi*, adult male (extralimital).<sup>b</sup>

- ec. Pileum and hindneck mostly rufous-brown; wing-coverts with conspicuous bars or transverse spots of black. (Central Venezuela.)

*Myrmeciza boucardi griseipectus*, adult male (extralimital).<sup>c</sup>

- dd. Upper chest black, like throat, the lower chest white medially.

- ee. Sides of chest paler and less extensively gray. (Coast district of Venezuela; Trinidad.)

*Myrmeciza boucardi swainsoni*, adult male (extralimital).<sup>d</sup>

- ee. Sides of chest darker and more extensively gray. (Eastern Panamá and Caribbean coast district of Colombia.)

*Myrmeciza boucardi panamensis*, adult male (p. 107).

<sup>a</sup> I have not seen *Thamnophilus leuconotus* Spix, referred to *Myrmelastes* by recent authors.

I am quite unable to appreciate any reasons for retaining a genus *Myrmelastes* as distinguished from *Myrmeciza*, unless the former is restricted to the type (*M. plumbeus*). The latter differs from other species in much greater development of the plumage of the lower back and rump, stouter bill, more rounded wing, and narrower, more broadly operculate nostrils. On the other hand, *M. boucardi* and its allies have a longer and more slender bill, longer tail, with relatively narrower rectrices, longer outermost primary, and very different style of coloration. While not so homogeneous as most genera, however, the group, after the elimination of the long-tailed and otherwise very different species constituting the genus *Drymophila* Swainson (see page 15), may, on the whole, be considered a fairly natural group.

<sup>b</sup> *Myrmeciza boucardi* Berlepsch, Ibis, 5th ser., vi, no. xxi, Jan., 1888, 129 (Bogotá, Colombia; coll. Count von Berlepsch); Sclater, Cat. Birds Brit. Mus., xv, 1890, 279, part (Bogotá).—[*Drymophila*] *boucardi* Sharpe, Hand-list, iii, 1901, 34.

<sup>c</sup> *Myrmeciza swainsoni griseipectus* Berlepsch and Hartert, Novit. Zool., ix, no. 1, April 10, 1902, 76 (Caicará, Orinoco R., Venezuela; coll. Tring Mus.).

<sup>d</sup> *Myrmeciza swainsoni* Berlepsch, Ibis, 5th ser., vi, no. xxi, Jan., 1888, 130, in text (based on *Myrmothera longipes* Swainson, but not of Vieillot).—*M[yrme]ciza* *boucardi swainsoni* Ridgway, Proc. Biol. Soc. Wash., xxi, Oct. 20, 1908, 194, in text.—*Myrmeciza longipes albiventris* Chapman, Auk, x, no. 4, Oct., 1893, 343; Bull. Am. Mus. N. H., vi, Feb., 1894, 51 (Princetown, Trinidad; coll. Am. Mus. N. H.).—[*Drymophila*] *albiventris* Sharpe, Hand-list, iii, 1901, 34 (Trinidad).—*Myrmeciza longipes longipes* (not *Myrmothera longipes* Swainson?) Hellmayr, Novit. Zool., xiii, 1906, 33 (Trinidad; crit.).



cc. Abdomen slate color or gray.

d. Back with a large concealed patch of white; sexes nearly alike in color.

e. Throat uniform black. (Costa Rica and western Panamá.)

**Myrmeciza læmosticta**, adult male (p. 109).

ee. Throat spotted or barred with white.

**Myrmeciza læmosticta**, adult female (p. 109).<sup>\*</sup>

dd. Back without a concealed white patch; sexes very different in color.

e. All the wing-coverts with a white apical spot or dot; tail relatively shorter.

f. Darker, the back, rump, etc., deep mummy or vandyke brown, head (all round) black, chest, breast, and abdomen blackish slate. (North-western Ecuador)....**Myrmeciza maculifer**, adult male (extralimital).<sup>a</sup>

ff. Paler, the back, rump, etc., mars brown, head (all round) blackish slate, chest, breast, and abdomen slate-gray. (Eastern Panamá and adjacent portion of Colombia)....**Myrmeciza cassini**, adult male (p. 110).

ee. Wing-coverts (except, sometimes, a few of the more anterior lesser coverts) without white spots or dots. (*Myrmeciza exsul*.)

f. Slightly darker or duller in general coloration, with slate color of under parts usually not paler on abdomen. (Caribbean slope of Panamá, Costa Rica, and Nicaragua.)

**Myrmeciza exsul exsul**, adult male (p. 111).

ff. Slightly brighter in coloration, with slate color of under parts usually paler on abdomen. (Pacific slope of Costa Rica and western Panamá.)

**Myrmeciza exsul occidentalis**, adult male (p. 113).

bb. Back, wings, etc. (whole upper parts), also entire under parts, uniform black, the anterior lesser wing-coverts white.

c. Forehead and lores densely (normally) feathered; white area on anterior margin of wing narrower; tarsus 31.5–32. (Central Colombia.)

**Myrmeciza immaculata**, adult male (extralimital).<sup>b</sup>

cc. Forehead and lores scantily feathered; white area on anterior margin of wing broader; tarsus 33.5–36.

d. White area on anterior portion of wing smaller, involving only marginal lesser coverts; tarsus 33.5–34.5. (Costa Rica and western Panamá.)

**Myrmeciza zeledoni**, adult male (p. 114).

dd. White area on anterior portion of wing much larger, involving nearly the whole of the lesser covert area; tarsus 36. (Western Ecuador to central Colombia.).....**Myrmeciza berlepschi**, adult male (extralimital).<sup>c</sup>

aa. Under parts without any black.

b. Throat and chest buff or ochraceous-buff (the former sometimes whitish); abdomen white. (*Myrmeciza boucardi*.)

c. Wing-coverts distinctly spotted or barred with black.

d. Spots or bars on wing-coverts larger, very conspicuous.

**Myrmeciza boucardi griseipectus**, adult female (extralimital).

dd. Spots or bars on wing-coverts smaller, inconspicuous.

**Myrmeciza boucardi panamensis**, adult female (p. 108).

<sup>a</sup> *Myrmelastes exsul maculifer* Hellmayr, Novit. Zool., xiii, no. 2, July 10, 1906, 340, 342 (Paramba, n. w. Ecuador, 3,500 ft.; coll. Tring Mus.).—*M[yrmelastes] maculifer* Ridgway, Proc. Biol. Soc. Wash., xxi, Oct. 20, 1908, 194, in text.

<sup>b</sup> *T[hamnophilus] immaculatus* Lafresnaye, Rev. Zool., viii, Sept., 1845, 340 (Bogotá, Colombia; types now in coll. Bost. Soc. N. H.). See Ridgway, Proc. Biol. Soc. Wash., xxii, 1907, 74, under *Myrmeciza berlepschi*.

<sup>c</sup> *Myrmeciza berlepschi* Ridgway, Proc. Biol. Soc. Wash., xii, April 17, 1909, 74 (Chimbo, n. w. Ecuador; coll. U. S. Nat. Mus.). This form (of which I have not seen Colombian specimens) may prove to be only subspecifically distinct from *M. zeledoni*.

cc. Wing-coverts not distinctly, if at all, spotted or barred with black.

*Myrmeciza boucardi swainsoni*, adult female and young (extralimital).

*Myrmeciza boucardi panamensis*, young male (p. 108).<sup>a</sup>

bb. Throat gray or dusky; chest and abdomen brown or tawny.

c. Smaller (wing 62-71, tarsus 26-31); pileum slaty or blackish, in contrast with chestnut or chestnut-brown of back; tail brown.

d. All the wing-coverts with a terminal spot or dot of white; under parts paler, becoming buffy on abdomen....*Myrmeciza cassini*, adult female (p. 110).

dd. Wing-coverts uniform brown (except, sometimes, a few small dots of white near bend of wing); under parts darker, the abdomen brown. (*Myrmeciza exsul*.)

c. General color of under parts much duller, the chest vandyke brown.

*Myrmeciza exsul exsul*, adult female (p. 111).

cc. General color of under parts much brighter, the chest bright chestnut or tawny-chestnut...*Myrmeciza exsul occidentalis*, adult female (p. 113).

cc. Larger (wing 75-81, tarsus 32-35); tail blackish; pileum dark brown, like back, etc.

d. Forehead and lores densely (normally) feathered; chin to auricular region grayish dusky; throat dull grayish, chest slaty olive; back chestnut-brown; tail blackish brown; culmen, 19.5.

*Myrmeciza immaculata*, adult female (extralimital).

dd. Forehead and lores scantily feathered; chin to auricular region dull black; lower throat, chest, and other under parts deep vandyke brown; back, etc., dark vandyke brown; tail black; culmen, 20.5-22.

*Myrmeciza zeledoni*, adult female (p. 114).

### MYRMECIZA BOUCARDI PANAMENSIS Ridgway.

#### WHITE-BELLIED ANTbird.

*Adult male*.—Pileum and hindneck gray or slate-gray, at least anteriorly and laterally, the gray paler on sides of occiput (supra-auricular region), the crown, occiput, and hindneck usually more or less overlaid by chestnut-brown (burnt-umber or vandyke), sometimes uniformly of this color; rest of upper parts plain bright cinnamon-rufous or chestnut-rufous, the color paler and more tawny on primaries; anterior margin of lesser wing-covert area white or pale buffy, immediately followed by more or less of black spotting; middle wing-coverts sometimes with an indistinct subterminal bar of dusky; loreal, suborbital, auricular, and malar regions, chin, throat, and chest uniform black, the first mixed with gray anteriorly; lower chest and breast (except medially) and sides of upper chest plain gray (no. 6 or no. 7), passing posteriorly into tawny-buff or clay color on flanks; median portion of lower chest and breast, together with abdomen, white; under tail-coverts tawny or tawny-ochraceous; smaller under wing-coverts white or buffy white, those on carpal region with more or less distinct central or mesial marks of dusky; inner webs of remiges broadly edged with vinaceous-cinnamon; bill black; legs and feet dull yellowish or pale yellowish

<sup>a</sup> The distinctive characters of the several forms of this species are not very evident in females and immature birds. I have not seen the adult female of *M. b. boucardi*.

brown (in dried skins); length (skins), 145–152 (150); wing, 65.5–71.5 (69.3); tail, 51–57.5 (53.8); culmen, 18.5–20.5 (19.6); tarsus, 28–31.5 (30.5); middle toe, 16.5–18.5 (17.5).<sup>a</sup>

*Adult female*.—Pileum and hindneck brown (nearly mummy brown), passing into grayish (more or less extensively) on forehead and into light buffy grayish on supra-auricular region; rest of upper parts plain cinnamon-rufous, somewhat darker and duller on tail, paler and more tawny or cinnamomeous on primaries; lesser wing-coverts mixed black and cinnamon-brown; middle coverts crossed by a broad subterminal bar of black, the tip lighter cinnamon-rufous than general color; the greater coverts and tertials similarly marked but black subterminal bar narrower; auricular region dark brown or dusky, with narrow shaft-streaks of buffy or whitish; malar region, throat, and chest plain ochraceous-buff, passing into white or buffy white on chin; sides and flanks paler ochraceous-buff, somewhat tinged with grayish; breast and abdomen white; under tail-coverts tawny-ochraceous; maxilla dark horn color, mandible paler; legs and feet dull yellowish or light yellowish brown (in dried skins); length (skins), 133–154 (141); wing, 62–69.5 (64.8); tail, 49–58.5 (52.2); culmen, 18.5–20 (19.2); tarsus, 28.5–31 (30); middle toe, 16–18.5 (16.8).<sup>b</sup>

*Immature male*.—Similar to the adult female, but without distinct, if any, black markings on wings.

Panamá (Lion Hill; Panamá; Sabana de Panamá; Verágua) to northeastern Colombia (Santa Marta, Cacagualito, Don Diego, and Bonda, Santa Marta; Cartagena).

(?) *Myrmeciza longipes* (not *Myrmothera longipes* Vieillot) SCLATER, Proc. Zool. Soc. Lond., 1858, 249, part ("New Granada").

*Myrmeciza longipes* LAWRENCE, Ann. Lyc. N. Y., vii, 1862, 325 (Lion Hill, Panamá).—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1864, 357 (Lion Hill).

*Myrmeciza swainsoni* (not of Berlepsch) SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 229, part (Verágua and Lion Hill, Panamá).

<sup>a</sup> Eleven specimens.

<sup>b</sup> Nine specimens.

| Locality.                                                         | Wing. | Tail. | Culmen. | Tarsus. | Middle toe. |
|-------------------------------------------------------------------|-------|-------|---------|---------|-------------|
| MALES.                                                            |       |       |         |         |             |
| Five adult males from eastern Panamá.....                         | 68.5  | 52.5  | 19.7    | 30.7    | 17.2        |
| Six adult males from Santa Marta, Colombia.....                   | 70    | 55.5  | 19.5    | 30.2    | 17.7        |
| Two adult males ( <i>M. b. swainsoni</i> ) from Venezuela.....    | 66.7  | 52.7  | 18.5    | 29.5    | 16.7        |
| Ten adult males ( <i>M. b. swainsoni</i> ) from Trinidad.....     | 66.6  | 53.5  | 19.4    | 29.2    | 16.9        |
| FEMALES.                                                          |       |       |         |         |             |
| Four adult females from eastern Panamá.....                       | 63.9  | 50.4  | 18.9    | 29.5    | 16.4        |
| Five adult females from Santa Marta, Colombia.....                | 65.5  | 54    | 19.4    | 30.4    | 17.1        |
| Four adult females ( <i>M. b. swainsoni</i> ) from Venezuela..... | 66    | 53.4  | 17.3    | 28.6    | 16.4        |
| Six adult females ( <i>M. b. swainsoni</i> ) from Trinidad.....   | 66.3  | 52.5  | 18.7    | 28.2    | 16.5        |



*Drymophila swainsoni* THAYER and BANGS, Bull. Mus. Comp. Zool., xlv, 1906, 217 (Sabana de Panamá).

[*Drymophila*] *swainsoni* SHARPE, Hand-list, iii, 1901, 33, part (Colombia; Panamá).

*Myrmeciza boucardi* (not of Berlepsch) SCLATER, Cat. Birds Brit. Mus., xv, 1890, 279, part (Veragua; Panamá).—BANGS, Proc. Biol. Soc. Wash., xii, 1898, 138 (Santa Marta, Colombia).—ALLEN, Bull. Am. Mus. N. H., xiii, 1900, 160 (Bonda, etc., Santa Marta, Colombia).

*Myrmeciza boucardi panamensis* RIDGWAY, Proc. Biol. Soc. Wash., xxi, Oct. 20, 1908, 144 (line of Panamá Railway; coll. U. S. Nat. Mus.).

### MYRMECIZA LÆMOSTICTA Salvin.

#### SALVIN'S ANTBIRD.

*Adult male* (= *M. stictoptera* Lawrence).—Head and neck plain slate-black or blackish slate, becoming black on chin and throat; upper back dark brownish olive, the feathers black centrally and extensively white basally; lower back, rump, and upper tail-coverts dark chestnut or chestnut-brown, the tail similar but slightly darker; lesser and middle wing-coverts black, each with a roundish apical spot of white, some of the coverts along anterior border of wing with outer web wholly white; greater coverts and secondaries dark chestnut-brown, some of the former with indistinct small apical spots of fulvous; alula and primary-coverts uniform dusky grayish brown; primaries prouts brown, the outermost without white edging; chest, breast, anterior portion of sides, and upper abdomen, deep slate-gray or slate color, the feathers blackish centrally; posterior portion of sides, flanks, and under tail-coverts plain vandyke brown; maxilla black, mandible brownish (dark bluish horn color in life); <sup>a</sup> iris carmine red, scarlet, or crimson; <sup>a</sup> legs and feet horn brown (lead blue or dark purplish lead color in life); <sup>a</sup> length (skins), 120–141 (131); wing, 62–65.5 (64.3); tail, 44–49 (46.5); culmen, 17.5–20 (18.5); tarsus, 25.5–28 (26.7); middle toe, 16–18 (17.1).<sup>b</sup>

*Adult female* (= *M. læmosticta* Salvin).—Similar to the adult male, but throat conspicuously spotted with white, and pileum and hind-neck mostly dark sepia brown instead of wholly slate-black or blackish slate; length (skins), 121–145 (131); wing, 62.5–65 (63.3); tail, 42–49 (44.8); culmen, 17–18.5 (18); tarsus, 26–28 (26.8); middle toe, 17–18 (17.2).<sup>b</sup>

Costa Rica (Tucurríqui; Angostura; San Carlos; La Florida; Turrialba; Peralta; Guápiles; Cuábre; Carrillo; La Vijagua; Rio Súcio) and western Panamá (Santa Fé de Veragua).

*Myrmeciza læmosticta* SALVIN, Proc. Zool. Soc. Lond., 1864 (pub. Apr. 1, 1865) 582 (Tucurríqui, Costa Rica; coll. Salvin and Godman); 1867, 145 (Santa Fé de Veragua, Panamá; crit.).—LAWRENCE, Ann. Lyc. N. Y., ix, 1868, 109

<sup>a</sup> M. A. Carriker, jr., on labels.

<sup>b</sup> Ten specimens, from Costa Rica.

- (Tucurríqui).—FRANTZIUS, Journ. für Orn., 1869, 305 (Costa Rica).—SCLATER, Cat. Birds Brit. Mus., xv, 1890, 280.—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 230, pl. 51, fig. 1.—CARRIKER, Ann. Carnegie Mus., vi, 1910, 617 (Caribbean slope, 1,000–2,500 ft., Costa Rica; crit.; habits).  
 [Myrmeciza] *læmosticta* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 74.  
*Myrmeciza læmosticta læmosticta* HELLMAYR, Novit. Zool., xiii, 1906, 343 (crit.).  
 [Drymophila] *læmosticta* SHARPE, Hand-list, iii, 1901, 34.  
*Drymophila læmosticta* CARRIKER, Ann. Carnegie Mus., v, 1908, 9, in text.  
*Myrmeciza stictoptera* LAWRENCE, Ann. Lyc. Nat. Hist. N. Y., viii, 1867, 132 (Angostura, Costa Rica; coll. U. S. Nat. Mus.); ix, 1868, 109 (do.).—FRANTZIUS, Journ. für Orn., 1869, 306 (Costa Rica).—CHERRIE, Proc. U. S. Nat. Mus., xiv, 1891, 532 (San Carlos, Costa Rica; crit.).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 230.  
 [Drymophila] *stictoptera* SHARPE, Hand-list, iii, 1901, 34.  
*Drymophila stictoptera* CARRIKER, Ann. Carnegie Mus., v, 1908, 9 (crit.).

### MYRMECIZA CASSINI (Ridgway).

#### CASSIN'S ANTBIRD.

*Adult male*.—Head and neck, all round, uniform slate-black or blackish slate; back, scapulars, rump, upper tail-coverts, tail, and secondaries plain bright mummy brown or mars brown; edge of wing white; lesser wing-coverts brownish black or blackish brown, each with a conspicuous apical spot of white;<sup>a</sup> alula dusky brown, the outermost feather broadly edged with white; primary-coverts uniform dusky brown; primaries grayish brown basally passing terminally into light olive-brown, the outermost edged with white; under parts, except chin, throat, and under tail-coverts, plain slate-gray, somewhat paler posteriorly, where slightly tinged with fulvous; under tail-coverts light mummy brown; bill black; legs and feet light yellowish gray (in dried skin); wing, 69; tail, 42; culmen (bill defective); tarsus, 29; middle toe, 18.<sup>b</sup>

*Adult female?*.—Upper parts as in the adult male, but brown of back, etc., much deeper (chestnut-brown); chin and most of throat uniform slate color; median portion of lower throat, chest, and breast chestnut, the remaining under parts slightly paler and duller (more russet); wing, 64; tail, 39; culmen (bill defective); tarsus, 26; middle toe, 18.<sup>c</sup>

*Immature male*.<sup>d</sup>—Similar to the supposed adult female, as described above, but brown of upper parts lighter and less castaneous (deeper, however, than in the adult male described), and general color of under parts much lighter (dull cinnamon-rufous on chest

<sup>a</sup> In the single specimen that I have been able to examine the middle and greater coverts are wanting.

<sup>b</sup> One specimen (the type).

<sup>c</sup> One specimen, from Turbo, Colombia.

<sup>d</sup> Described from no. 150,920, U. S. Nat. Mus., Cascajal (Coclé), Panamá; Heyde.

passing into ochraceous-buff on abdomen), the sides and flanks more brownish (nearly raw umber), the slate-gray restricted to chin and upper throat; wing, 63; tail, 41; culmen, 19; tarsus, 27; middle toe, 17.

Eastern Panamá (Cascajal, Coelé) and adjacent portion of north-western Colombia (Turbo).

*Myrmeciza exsul*<sup>a</sup> (not of Sclater, 1858) CASSIN, Proc. Ac. Nat. Sci. Phila., 1860, 191 (Turbo, Colombia).

*Myrmelastes cassini* RIDGWAY, Proc. Biol. Soc. Wash., xxi, Oct. 20, 1908, 194 (Turbo, n. w. Colombia; coll. U. S. Nat. Mus.).

### MYRMECIZA EXSUL EXSUL Sclater.

#### SCLATER'S ANTBIRD.

*Adult male*.—Head and neck, all round, uniform slate-black; upper parts (except pileum and hindneck) plain deep chestnut; lesser wing-coverts at least partly black, those along anterior margin of wing more or less extensively white, and behind this white margin often a few small dots of white; the carpo-metacarpal region also streaked with white, and outermost feather of alula sometimes edged with white; under parts (except chin, throat, flanks, anal region and under tail-coverts), plain blackish slate color; flanks, anal region, and under tail-coverts plain mummy or vandyke brown; bill black; iris brown; bare skin of postocular region and chin sky blue; legs and feet dusky (blackish horn color or dark bluish gray in life); length (skins), 126–148 (134); wing, 64–71 (67.4); tail, 44–49 (46.8); culmen, 18.5–21.5 (20.2); tarsus, 27–29.5 (28.2); middle toe, 17.5–19 (17.9).<sup>b</sup>

*Adult female*.—Upper parts as in adult male, but slate-black of pileum and hindneck slightly duller; chin and throat slate-blackish, but usually duller than in adult male; rest of under parts plain vandyke or mummy brown; bill, etc., as in adult male, but mandible

<sup>a</sup> The following citations of *Myrmeciza* (or *Myrmelastes*) *exsul* refer to one or more allied forms:

*Myrmeciza exsul* (not of Sclater, 1858) SCLATER, Proc. Zool. Soc. Lond., 1860, 294 (Esmeraldas, w. Ecuador; crit.); Cat. Am. Birds, 1862, 187 (Esmeraldas); Cat. Birds Brit. Mus., xv, 1890, 279 (Esmeraldas and Intac, Ecuador; Nechi, Colombia).—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1879, 526 (Nechi, Antioquia, Colombia).—BERLEPSCH and TACZANOWSKI, Proc. Zool. Soc. Lond., 1883, 566 (Chimbo, w. Ecuador; crit.).—SALVADORI and FESTA, Boll. Mus. Zool., etc., Torino, xv, 1899, no. 362, p. 31 (Foreste del Rio Peripa, w. Ecuador).—HARTERT, Novit. Zool., v, 1898, 493 (Cachavi, n. w. Ecuador).—GOODFELLOW, Ibis, 1902, 65 (Santo Domingo and Guanacillo, n. w. Ecuador; habits, etc.).

[*Myrmeciza*] *exsul* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 74.

[*Myrmelastes*] *exsul* SHARPE, Hand-list, iii, 1901, 32 (Colombia to Ecuador).

(The bird from Nechi, Colombia, may possibly be *M. cassini*.)

<sup>b</sup> Sixteen specimens.



sometimes brownish; length (skins), 124–140 (132); wing, 64–69.5 (66.4); tail, 42.5–50 (45.2); culmen, 19–21 (20); tarsus, 27.5–31 (28.3); middle toe, 16.5–19 (17.9).<sup>a</sup>

Caribbean slope of Panamá (Lion Hill; Frijole station; Chepo; Panamá; Cascajál, Coclé), Costa Rica (Jiménez; Sipúrio; Talamanca; Angostura; Rio Reventazón; Guácimo; Guápiles; Cuábre; Rio Sicsola; Siquirres; La Cristina; Carrillo; Limón; La Balsa; Turrialba; Volcan de Turrialba; El Hogár; Rio Banana; La Vijagua; Pacuare) and Nicaragua (Los Sábalos; Rio Escondido; Chontales; San Emilis, Lake Nicaragua).

*Myrmeciza exsul* SCLATER, Proc. Zool. Soc. Lond., 1858 (pub. 1859), 540 (Panamá; coll. Derby Mus.).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 614 (Caribbean lowlands up to 2,000 ft., Costa Rica; crit.; habits; descr. nest and eggs).

*M[yrmeiza] exsul* HELLMAYR, Verh. k. k. zool.-bot. Gesellsch. Wien, 1903, 215 (diagnosis).

*Myrmelastes exsul exsul* HELLMAYR, Novit. Zool., xiii, 1906, 341 (Panamá; e. Costa Rica; Rio Escondido and Chontales, Nicaragua; crit.; synonymy).

*Myrmeciza immaculata* (not *Thamnophilus immaculatus* Lafresnaye) SCLATER and SALVIN, Proc. Zool. Soc. Lond., Oct. 1, 1864, 357 (Lion Hill, Panamá; coll. Salvin and Godman).—LAWRENCE, Ann. Lyc. N. Y., ix, 1868, 109 (Pacuare and Angostura, Costa Rica; crit.).—FRANTZIUS, Journ. für Orn., 1869, 305 (Costa Rica).—NUTTING, Proc. U. S. Nat. Mus., vi, 1883, 405 (Los Sábalos, Nicaragua; habits).—ZELEDÓN, Anal. Mus. Nac. Costa Rica, i, 1887, 115, part (Pacuare and Jiménez, Costa Rica).—SCLATER, Cat. Birds Brit. Mus., xv, 1890, 279, part (Panamá and Chepo, Panamá; “Valza,” i. e. La Balsa, Costa Rica).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, pl. 51, figs. 2, 3. [*Myrmeciza*] *immaculata* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 74.

*Myrmeciza intermedia* CHERRIE, Proc. U. S. Nat. Mus., xiv, no. 355, Sept. 4, 1891, 345 (Sipúrio, Talamanca, Costa Rica; coll. U. S. Nat. Mus.).

*Myrmelastes intermedius* SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 227, part (Los Sábalos, Nicaragua; Pacuare, Angostura, La Balsa, Jiménez, and Carrillo, Costa Rica; Lion Hill and Chepo, Panamá).—RICHMOND, Proc. U. S. Nat. Mus., xvi, 1893, 502 (Rio Escondido, Nicaragua; habits).—BANGS, Proc. New Engl. Zool. Club, ii, 1900, 25 (Loma del León, Panamá).

[*Myrmelastes*] *intermedius* SHARPE, Hand-list, iii, 1901, 32.

*Myrmelastes occidentalis intermedius* CARRIKER, Ann. Carnegie Mus., v, no. 1, Oct. 1, 1908, 10, in text.

<sup>a</sup> Fourteen specimens.

| Locality.                                                          | Wing. | Tail. | Culmen. | Tarsus. | Middle toe. |
|--------------------------------------------------------------------|-------|-------|---------|---------|-------------|
| MALES.                                                             |       |       |         |         |             |
| Six adult males from eastern Panamá.....                           | 67.4  | 47.2  | 19.4    | 28.4    | 17.8        |
| Ten adult males from eastern Costa Rica (8) and Nicaragua (2)...   | 67.4  | 46.5  | 20.6    | 28.1    | 18          |
| FEMALES.                                                           |       |       |         |         |             |
| Four adult females from eastern Panamá.....                        | 66.6  | 45.4  | 20.1    | 27.9    | 18          |
| Ten adult females from eastern Costa Rica (8) and Nicaragua (2)... | 66.3  | 45.2  | 20.1    | 28.5    | 17.9        |

## MYRMECIZA EXSUL OCCIDENTALIS (Cherrie).

## CHERRIE'S ANTBIRD.

*Adult male*.—Head and neck, all round, plain black or slate-black; rest of upper parts plain chestnut, the tail slightly darker; anterior lesser wing-coverts black (those along margin of wing white), the posterior ones more brownish; outermost feather of alula sometimes edged with white; chest, breast, sides, and abdomen plain blackish slate (rather darker anteriorly, where usually shading gradually into the black of throat, slightly paler, or clearer slate color, posteriorly); flanks, anal region, and under tail-coverts plain chestnut-brown or vandyke brown; bill black; iris brown; bare skin of postocular region and chin sky blue (in life); legs and feet dusky (blackish horn color or dark bluish gray in life); length (skins), 125–143 (133); wing, 65–71 (68.3); tail, 47–51.5 (48.1); culmen, 20–22 (20.7); tarsus, 27–29.5 (27.8); middle toe, 17.5–19.5 (18.2).<sup>a</sup>

*Young male (nestling)*.—Much like the adult male but coloration much duller, the chestnut of back mixed or tinged with sooty brown, the head, neck, and chest sooty blackish or brownish slate-black, and under parts of body mixed sooty brown and tawny brown.

*Adult female*.—Upper parts as in adult male, but color of back, etc., usually rather lighter, more tawny, chestnut, and less sharply defined against the dusky slate color of pileum and hindneck, which are usually more or less tinged with brown; sides of head, chin, and upper throat slate color, the latter sometimes tinged with tawny brown; lower throat and chest bright tawny-chestnut or rufous-chestnut, passing into russet or tawny-russet on breast and abdomen, the flanks, anal region, and under tail-coverts tawny-brown (between mars brown and russet); bill, etc., as in adult male; length (skins), 131–140 (135); wing, 62–69 (65.7); tail, 44.5–49 (46.8); culmen, 18.5–21.5 (20.1); tarsus, 27–29.5 (28.1); middle toe, 17–18 (17.7).<sup>a</sup>

Pacific slope of Costa Rica (Pozo del Pitál, Rio Naranjo; Pozo Azul de Pirris; Pozo del Rio Grande; Pozo de Terraba; El General; Paso Real; Boruca; Buenos Aires; Barranca, Boruca; Las Trojas; Palmár; Lagarto; La Palma de Nicoya; Esparta; San Mateo; San Carlos), and western Panamá (Divala; Bugaba).

*Myrmeciza immaculata* (not of Sclater and Salvin) SALVIN, Proc. Zool. Soc. Lond., 1870, 195 (Bugaba, Panamá; crit.).—BOUCARD, Proc. Zool. Soc. Lond., 1878, 61 (San Carlos and San Mateo, Costa Rica).—RIDGWAY, Proc. U. S. Nat. Mus., v, 1882, 398 (La Palma de Nicoya, Costa Rica; crit.).—ZELEDÓN, Anal. Mus. Nac. Costa Rica, 1887, 115, part (Las Trojas and Pozo Azul, w. Costa Rica).

*Myrmeciza immaculata occidentalis* CHERRIE, Auk, viii, April, 1891, 191 (Pozo Azul, s. w. Costa Rica; coll. U. S. Nat. Mus.).

<sup>a</sup> Ten specimens, from Costa Rica.

*Myrmeciza occidentalis* CHERRIE, Anal. Inst. Fis.-Geog. Costa Rica, vi, 1893, 19 (Pozo del Pitál, s. w. Costa Rica).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 616 (Pacific lowlands and foothills, Costa Rica; crit.; descr. nest and eggs).

*Myrmelastes occidentalis* SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 228 (Bebedero, etc., w. Costa Rica).—CHERRIE, Expl. Zool. Merid. Costa Rica, 1893, 43 (Palmár, Lagarto, Boruca, and Buenos Aires, s. w. Costa Rica).—CARRIKER, Ann. Carnegie Mus., v, 1908, 10 (crit.).

[*Myrmelastes*] *occidentalis* SHARPE, Hand-list, iii, 1901, 32.

*Myrmelastes exsul occidentalis* HELLMAYR, Novit. Zool., xiii, 1906, 341 (Pozo Azúl, etc., s. w. Costa Rica; Bugaba, Panamá; crit.).—BANGS, Auk, xxiv, 1907, 296 (Boruca, Paso Real, Pozo del Rio Grande, and Barranca, s. w. Costa Rica).—CARRIKER, Ann. Carnegie Mus., v, 1908, 10, in text.

[*Myrmelastes*] *exsul occidentalis* RIDGWAY, Proc. Biol. Soc. Wash., xxi, 1908, 194, in text.

*Myrmelastes intermedius* (not *Myrmeciza intermedia* Cherrie) SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 227, part (San Carlos and San Mateo, Costa Rica; Bugaba, Panamá).

### MYRMECIZA ZELEDONI Ridgway.

#### ZELEDÓN'S ANTIBIRD.

*Adult male*.—Uniform black, relieved only by a white patch on inner-anterior portion of lesser wing-covert area, a narrow white margin thence around bend of wing, and white edging to alulæ; bill and feet black; iris chestnut; bare skin of lores and orbits blue, becoming white behind eye;<sup>a</sup> length (skins), 168–188 (178); wing, 78–86 (80.9); tail, 70–82 (76.8); culmen, 21–23 (22); tarsus, 33.5–34.5 (34); middle toe, 20–22 (21.2).<sup>b</sup>

*Adult female*.—Above plain dark chocolate brown (or between chocolate and seal brown), the tail blackish brown or brownish black; loreal, orbital, and auricular regions, chin, and upper throat, blackish brown or brownish black; under parts lighter chocolate brown or vandyke brown; maxilla blackish brown, mandible pale yellowish brown or dull yellowish (in dried skins); legs and feet dusky brown (in dried skins); length (skins), 166–193 (175); wing, 75–81 (78.6); tail, 71.5–78 (75); culmen, 20.5–22 (21.1); tarsus, 32–35 (33.6); middle toe, 20–22 (21.1).<sup>c</sup>

Costa Rica (Naranjo de Cartago; Guayabo; Guápiles; Carrillo; La Hondura; Tucurríquí; Cariblanco de Sarapiquí) and western Panamá (Boquete de Chitra; Calobre; Calovévora; Caribbean slope, Volcan de Chiriquí). Western Colombia.

*Thamnophilus immaculatus* (not of Lafresnaye) SALVIN, Ibis, 1870, 114 (Tucurríquí, Costa Rica; crit.); Proc. Zool. Soc. Lond., 1870, 194 (Volcan de Chiriquí, Calovévora, and Calobre, Panamá).—SCLATER, Cat. Birds Brit. Mus., xv, 1890, 189, part (Tucurríquí, Costa Rica; Boquete de Chitra, Calobre, Calovévora, and Volcan de Chiriquí, Panamá).

<sup>a</sup> Zeledón, manuscript.

<sup>b</sup> Five specimens, from Costa Rica.

<sup>c</sup> Eight specimens from Costa Rica (7) and western Panamá (1).



- [*Thamnophilus*] *immaculatus* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 69, part.
- Myrmelastes immaculatus* SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 225, part (Costa Rica and Panama localities and references).—BANGS, Proc. New Engl. Zool. Club, iii, 1902, 42 (Volcan de Chiriqui, 2,000 ft.).
- [*Myrmelastes*] *immaculatus* SHARPE, Hand-list, iii, 1901, 32, part.
- Myrmeciza immaculata* CARRIKER, Ann. Carnegie Mus., vi, 1910, 618 (Caribbean slope Costa Rica, 1,000–4,000 ft.; crit.)<sup>a</sup>.
- Myrmeciza zeledoni* RIDGWAY, Proc. Biol. Soc. Wash., xxii, April 17, 1909, 74 (Guayabo, Costa Rica; coll. U. S. Nat. Mus.).

### Genus FORMICARIUS Boddaert.

- Formicarius* BODDAERT, Tabl. Pl. Enl., 1783, 43. (Type, *F. cayanensis* Boddaert=*F. colma* Boddaert.)
- (?) *Myrmecophaga* LACÉPÈDE, Tableaux Oiseaux, 1799, 6. (Type undeterminable, no species being named; nomen nudum.)
- Myiothera* SPIX, Av. Sp. Nov. Brazil, i, 1824, 72. (Type, *M. ruficeps* Spix=*Turdus colma* Gmelin.)
- Myiothera* D'ORBIGNY and LAFRESNAYE, Mag. de Zool., 1839 (Synopsis Avium, p. 14). (Type, *M. analis* D'Orbigny and Lafresnaye.)
- Myrmothera*, part, VIEILLOT, Analyse, 1816, 43, 70. (Type, none specified, and no species named; includes "Befroi, et quelques autres fourmilliers de Buffon").
- Myocincla* SWAINSON, Classif. Birds, ii, 1837, 230. (Type, *Turdus colma* Gmelin=*Formicarius colma* Boddaert.)

Rather large Formicariidæ (length about 150–180 mm.) with very dense, compact plumage; bill much shorter than head, depressed basally; short, rounded tail (less than two-thirds as long as the short and concave, rather pointed wing); latero-frontal antiæ with feathering short and dense; scutellate tarsi, short anterior claws, and plain coloration.

Bill shorter than head (exposed culmen about as long as distance from nostril to posterior angle of eye), with straight lateral outlines, slightly depressed basally, its width at latero-frontal antiæ greater than its depth at same point and equal to half the distance from nostril to tip of maxilla, or slightly less; culmen distinctly ridged, straight or nearly so for most of its length, decurved terminally, the tip of maxilla inconspicuously and rather obtusely uncinately; maxillary tomium slightly convex posteriorly, straight anteriorly, slightly notched subterminally; mandibular tomium faintly concave posteriorly, nearly straight or very faintly convex anteriorly, very indistinctly notched subterminally; gonys decidedly to rather

<sup>a</sup> Mr. Carriker erroneously concludes that because six skins of "*Myrmeciza immaculata* (Lafresnaye)" from western Colombia agree closely with Costa Rican specimens of *M. zeledoni*, the latter is not a tenable form. He quite overlooked the fact that the specimens from western Colombia which he examined are not *Thamnophilus immaculatus* of Lafresnaye, which is so different that their confusion would be almost impossible if specimens are actually compared. His observations simply extend the range of *M. zeledoni* to western Colombia.

strongly convex basally, nearly straight and ascending terminally. Nostril exposed, broadly oval, margined above by narrow membrane, posteriorly in contact with the short and very dense feathering of latero-frontal antiaë. Rictal bristles present but small; feathers of chin, malar antiaë, etc., short, without trace of terminal setæ. Wing rather short but pointed, very concave beneath, the outer primaries rather strongly arcuate, the longer ones projecting decidedly beyond secondaries; sixth, seventh, or eighth primaries longest, the tenth (outermost) nearly three-fourths as long as the longest, the ninth decidedly longer than secondaries. Tail about three-fifths as long as wing, rounded (graduation less than distance from nostril to tip of maxilla), the rectrices (12) rather broad and firm, rounded terminally. Tarsus about two and a half times as long as bill from nostril, decidedly less than two-fifths as long as wing, distinctly scutellate, the plantar scutella quadrate, in two longitudinal series; middle toe, with claw, a little more than two-thirds as long as tarsus (longer than commissure); outer toe, without claw, reaching to about middle of subterminal phalanx of middle toe, the inner toe very slightly shorter; hallux much shorter than inner toe, slightly stouter; basal phalanx of middle toe united for more than half its length to outer toe, for less than half its length to inner toe; anterior claws very short, relatively broad, slightly curved; claw of hallux slightly curved, nearly as long as its digit. Plumage compact, dense, that of rump and flanks not elongated nor lax; feathers of pileum not elongated.

*Coloration.*—General color uniform brown or blackish (the head sometimes rufescent) above, dusky, grayish, or brownish below, sometimes with chest rufescent or tawny, the under tail-coverts usually rufescent and throat black (sometimes margined posteriorly with a narrow band of cinnamon or chestnut); inner webs of remiges with basal portion (abruptly) buff, ochraceous, or tawny, the under wing-coverts similar but tipped with black; sexes alike; young similar but throat usually more or less variegated with white.

*Range.*—Southern Mexico to western Ecuadór, Peru, Bolivia, southeastern Brazil, and Cayenne. (About fifteen species and subspecies.)

This genus is very distinct from any other, its nearest relative being the genus *Chamæza* Vigors,<sup>a</sup> of South America, which differs in longer tail (more than two-thirds as long as wing), much greater development of plumage of lower back and rump, different character of feathering of anterior portion of head, shorter and more depressed bill, variegated plumage, and other features.

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<sup>a</sup> See page 15.

## KEY TO THE SPECIES AND SUBSPECIES OF FORMICARIUS.

- a. Pileum and hindneck rufescent or tawny, conspicuously different from color of back; outer web of exterior feather of alula light tawny or buff.  
 b. Forehead bright tawny or rufescent, like crown, etc. (Southeastern Brazil.)  
**Formicarius colma** (extralimital).<sup>a</sup>  
 bb. Forehead black or dusky. (Amazon Valley to Cayenne and Colombia.)  
**Formicarius nigrifrons** (extralimital).<sup>b</sup>  
 aa. Pileum dull brownish, not very different from color of back, or else black; outer web of exterior feather of alula grayish brown.  
 b. Chest black, brownish gray, or slaty.  
 c. Sides of neck similar in color to hindneck, not rufescent or cinnamomeous.  
 d. Pileum brown, like back, with only centers of feathers blackish; chest slate-gray in contrast with black of throat. (Bolivia to northeastern Peru.)  
**Formicarius analis** (extralimital).<sup>c</sup>  
 dd. Pileum and chest black. (Costa Rica and western Panamá.)  
**Formicarius analis nigricapillus** (p. 118).  
 cc. Sides of neck rufescent or cinnamomeous. (*Formicarius moniliger*.)  
 d. Under tail-coverts only partly, if at all, rusty, tawny, or cinnamomeous, the longer (posterior) ones being dusky margined with brown.  
 e. A distinct rusty or cinnamomeous collar across foreneck.  
 f. Darker, the back, etc., bright mummy brown to chestnut-brown, the chest sooty slate-gray. (Southeastern Mexico, except Yucatan, to Guatemala).....**Formicarius moniliger moniliger** (p. 119).  
 ff. Paler, the back, etc., raw-umber to light olive-brown, the chest mouse gray to drab-gray.

<sup>a</sup> *Formicarius colma* Boddaert, Tabl. Pl. Enl., 1783, 44 (=young; based on *Le Colma. de Cayenne* Daubenton, Pl. Enl., pl. 703, fig. 1); Selater, Cat. Birds Brit. Mus., xv, 1890, 302.—[*Turdus colma* Gmelin, Syst. Nat., i, pt. 2, 1789, 827.—*Myrmothera colma* Vieillot, Tabl. Enc. Méth., 1822, 681, 683.—*Myiothera colma* Cabanis, in Schomburgk's Reis. Brit. Guiana, iii, 1848, 686.—*Formicarius cayanensis* Boddaert, Tabl. Pl. Enl., 1783, 50 (=adult; based on *Le Tetéma, de Cayenne* Daubenton, Pl. Enl., pl. 821); Ridgway, Proc. U. S. Nat. Mus., xvi, 1893, 670 (monogr.).—*M[yrmoris]* *cayanensis* Cabanis and Heine, Mus. Hein., ii, 1859, 7.—*Myiothera tetema* Burmeister, Syst. Ueb. Th. Bras., iii, 1856, 46.—*Myioturdus tetema* Maximilian, Beitr. Naturg. Bras., iii, 1831, 1030.—*Myrmothera fuscicapilla* Vieillot, Nouv. Dict. d'Hist. Nat., xii, 1817, 112.—*Myothera ruficeps* Spix, Av. Bras., i, 1825, 72, pl. 72, fig. 1 (locality not given; coll. Munich Mus.).—*Formicarius ruficeps* Pelzeln, Orn. Bras., ii Abth., 1869, 90, part.—*Formicarius ruficeps ruficeps* Hellmayr, Orn. Monats., x, March, 1902, 35 (geog. range).

<sup>b</sup> *Formicarius nigrifrons* Gould, Ann. and Mag. N. H., ser. 2, xv, May, 1855, 344 Chamicuros, e. Peru; coll. J. Gould); Proc. Zool. Soc. Lond., 1855 (pub. May 16), 68; Selater, Cat. Birds Brit. Mus., xv, 1890, 303; Ridgway, Proc. U. S. Nat. Mus., xvi, 1893, 672 (monogr.).—*Formicarius colma nigrifrons* Sneath, Journ. für Orn., Jan., 1908, 17 (Rio Purús, w. Brazil).—(?) *Formicarius nigrifrons glaucopectus* Ridgway, Proc. U. S. Nat. Mus., xvi, no. 961, Nov. 28, 1893, 673, in text (British Guiana; coll. U. S. Nat. Mus.).

<sup>c</sup> *M[yothena]* *analis* D'Orbigny and Lafresnaye, Synop. Av., in Mag. de Zool., 1837, 14; cl. ii, pls. 77–79 (Yuracares and Chiquitos, Bolivia); D'Orbigny, Voy. Amér. Mérid., Ois., 1839, pl. 6 bis, fig. 1.—*Formicarius analis* Selater, Proc. Zool. Soc. Lond., 1857, 46; Cat. Birds Brit. Mus., xv, 1890, 304, part; Ridgway, Proc. U. S. Nat. Mus., xvi, 1893, 673 (monogr.).—*Formicarius analis analis* Hartert, Novit. Zool., ix, Dec., 1902, 613 (Bolivia to e. Peru; diagnosis).—*M[yrmoris]* *analis* Cabanis and Heine, Mus. Hein., ii, 1859, 7.



g. Darker, the back, etc., raw-umber brown, the chest mouse gray. (British Honduras)....*Formicarius moniliger intermedius* (p. 121).

gg. Paler, the back, etc., light olive-brown (or between broccoli brown and isabella color), the chest drab-gray. (Yucatan.)

*Formicarius moniliger pallidus* (p. 121).

ee. No rusty or cinnamomeous collar across foreneck. (Eastern Costa Rica and eastern Nicaragua).....*Formicarius moniliger umbrosus* (p. 122).

dd. Under tail-coverts wholly, or for much the greater part, rusty, tawny, or cinnamomeous.

e. Forehead lighter and more rufescent or cinnamomeous brown than crown.

f. Larger (wing averaging 93.5 in adult male, 91 in adult female); color of under parts more slaty, the under tail-coverts darker rusty. (South-western Costa Rica and western Panamá.)

*Formicarius moniliger hoffmanni* (p. 123).

ff. Smaller (wing averaging 87 in adult male, 86.9 in adult female); color of under parts more brownish or more strongly suffused with olive or buffy, the under tail-coverts paler, more tawny. (Eastern Panamá.)

*Formicarius moniliger panamensis* (p. 124).

ee. Forehead concolor with crown (not more rufescent or cinnamomeous).

f. White loreal spot small, sometimes obsolete; under parts nearly uniform deep brownish gray; under tail-coverts rufous-tawny. (Trinidad, Venezuela, and adjacent coast district of Colombia.)

*Formicarius moniliger saturatus* (extralimital).<sup>a</sup>

ff. White loreal spot large, conspicuous; under parts clear brownish gray, fading into nearly white on lower abdomen; under tail-coverts clear tawny. (British Guiana.)

*Formicarius moniliger crissalis* (extralimital).<sup>b</sup>

bb. Chest chestnut or rufous-tawny.

c. Pileum rusty brown or chestnut. (Western Panamá to eastern Costa Rica; northwestern Colombia?).....*Formicarius rufpectus* (p. 125).

cc. Pileum black. (Eastern Ecuador)....*Formicarius thoracicus* (extralimital).<sup>c</sup>

### FORMICARIUS ANALIS NIGRICAPILLUS (Ridgway).

#### BLACK-HEADED ANTHRUSH.

*Adult male*.—Head, all round, and chest uniform sooty black, this gradually passing through sooty blackish slate on upper breast into brownish slate-gray on abdomen, where (in fresh plumage) the feathers are margined terminally with dull buffy whitish; sides and flanks similar in color to breast, but faintly tinged with olive; hind-neck, sides of neck and general color of upper parts plain dark van-

<sup>a</sup> *Formicarius saturatus* Ridgway, Proc. U. S. Nat. Mus., xvi, no. 961, Nov. 28, 1893, 677 (Princetown, Trinidad; coll. Am. Mus. N. H.).—*Formicarius analis saturatus* Chapman, Bull. Am. Mus. N. H., vi, Feb. 16, 1894, 53 (Trinidad).—*Formicarius hoffmanni saturatus* Hellmayr, Novit. Zool., xiii, 1906, 33 (Trinidad; crit.).

<sup>b</sup> *Myrmornis crissalis* Cabanis, Journ. für Orn., Mar., 1861, 96, in text (Roraima, Brit. Guiana).—*Formicarius crissalis* Sclater and Salvin, Proc. Zool. Soc. Lond., 1867, 576 (Pará); Ridgway, Proc. U. S. Nat. Mus., xvi, 1893, 676 (monogr.).—*F[ormicarius] a[nalis] crissalis* Hellmayr, Novit. Zool., xiv, Nov., 1907, 392 (geog. range).

<sup>c</sup> *Formicarius thoracicus* Taczanowski and Berlepsch, Proc. Zool. Soc. Lond., 1885, 101 (Machay, e. Ecuador; coll. Branicki Mus.); Sclater, Cat. Birds Brit. Mus., xv, 1890, 301, footnote; Ridgway, Proc. U. S. Nat. Mus., xvi, 1893, 685 (monogr.).

dyke brown, or approaching seal brown, the upper tail-coverts seal brown or dark chocolate; tail blackish brown or brownish black; shorter under tail-coverts light rufous-chestnut or chestnut-tawny, the longer ones sooty black; under wing-coverts blackish at tip (broadly) and base, ochraceous in middle portion, the axillars similarly marked, but middle portion buff instead of ochraceous; inner webs of remiges crossed near base by a broad but not sharply defined band of dull ochraceous; bill black; legs and feet dusky horn color (in dried skins); length (skin), 168–175 (171); wing, 90.5–94 (92.3); tail, 49–51.5 (50.3); culmen, 23–24.5 (23.7); tarsus, 32; middle toe, 20.5–21 (20.7).<sup>a</sup>

*Adult female*.—Similar to the adult male, and probably not always distinguishable, but usually(?) with color of under parts of body slightly tinged with olive, the sides and flanks strongly olivaceous; length (skins), 163.5–164 (163.7); wing, 90–93.5 (91.7); tail, 48.5–49.5 (49); culmen, 24–25.5 (24.7); tarsus, 30–31.5 (30.7); middle toe, 21.<sup>a</sup>

Costa Rica (Tucurríqui; Carrillo; Cariblanco de Sarapiquí; Cerro de Santa Maria; Buena Vista) and western Panamá (Santiago de Veragua).

*Formicarius analis* (not *Myothera analis* Lafresnaye) SALVIN, Proc. Zool. Soc. Lond., 1866, 74, part (Tucurríqui, Costa Rica; Veragua, Panamá); 1867, 145 (Santa Fe de Veragua, Panamá; crit.).—LAWRENCE, Ann. Lyc. N. Y., ix, 1868, 110 (Costa Rica; crit.).—FRANTZIUS, Journ. für Orn., 1869, 306 (Costa Rica).—ZELEDÓN, Anal. Mus. Nac. Costa Rica, i, 1887, 115 (Costa Rica).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 235, part (Tucurríqui, Costa Rica; Santiago de Veragua, Panamá).

[*Formicarius*] *analis* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 75, part.

*Formicarius nigricapillus* "Cherrie" RIDGWAY, Proc. U. S. Nat. Mus., xvi, no. 961, Nov. 28, 1893, 675 (Buena Vista, Costa Rica; coll. U. S. Nat. Mus.).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 623 (Carrillo, Cariblanco de Sarapiquí, and Cerro de Santa Maria, Costa Rica).

[*Formicarius*] *nigricapillus* SHARPE, Hand-list, iii, 1901, 38, part (Costa Rica; Panama).

*Formicarius analis nigricapillus* HARTERT, Novit. Zool., ix, Dec., 1902, 614 (Cariblanco de Sarapiquí, Costa Rica; crit.).

## FORMICARIUS MONILIGER MONILIGER Sclater.

### MEXICAN ANTTTHRUSH.

*Adults (sexes alike)*.—Pileum dull black, the feathers broadly tipped or terminally margined with prouts brown, this often the prevailing color (the black being mostly concealed); rest of upper parts plain mummy brown, more castaneous (vandyke brown) on lower rump, upper tail-coverts, and hindneck; tail darker and duller brown basally, passing into dull slate-blackish terminally; loreal and suborbital regions, anterior half of auricular region, malar region,

<sup>a</sup> Two specimens, from Costa Rica.

chin, and throat uniform black, the first with a small central spot of white; band across foreneck and extending thence to hindneck and supra-auricular region and terminal portion of auricular region chestnut, duller laterally; under parts plain deep sooty grayish, darkest on chest (where sometimes strongly tinged with olive), paler on abdomen (where sometimes inclining to buffy whitish), the sides and flanks olive or mixed sooty gray and olive; under tail-coverts light brown (nearly raw-umber), the longer ones mostly blackish, margined terminally with light brown; under wing-coverts buff, broadly tipped with dark sooty brown; inner webs of remiges crossed by a broad band of tawny-buff anterior to their middle portion; bill black; iris brown; legs and feet brownish (in dried skins).

*Young*.—Essentially like adults but black of throat, etc., replaced by dark sooty brown; chestnut band across foreneck narrow and more or less broken, and general color of under parts more sooty.

*Adult male*.—Length (skins), 150–181 (173); wing, 87.5–94 (90.6); tail, 50–55 (52.9); culmen, 20.5–22 (21.2); tarsus, 30.5–33 (31.7); middle toe, 19–21 (20).<sup>a</sup>

*Adult female*.—Length (skins), 155–175 (167); wing, 85.5–92.5 (89.2); tail, 51–56 (53.5); culmen, 20–21 (20.7); tarsus, 30–33 (31.3); middle toe, 20.<sup>b</sup>

Southeastern Mexico, in States of Vera Cruz (Córdova; Playa Vicente; Cerro de la Defensa; Atoyác; Motzorongo; Buena Vista), Oaxaca (mountains near Santo Domingo) and Tabasco (Teapa) and Guatemala (Choctúm; Chiséc; Cobán; sources of Rio de la Pasión; Kampamác; Tactic; Nehaj, Quiché).

*Formicarius moniliger* SCLATER, Proc. Zool. Soc. Lond., 1856, 294 (Córdova, Vera Cruz, Mexico; coll. A. Sallé, now in coll. Brit. Mus.); 1858, 278, part (Vera Cruz); 1859, 383 (Playa Vicente, Vera Cruz); Cat. Am. Birds, 1862, 191 (Oaxaca); Cat. Birds Brit. Mus., xv, 1890, 303, part (Córdova, Vera Cruz; Oaxaca; sources Rio de la Pasión and Choctúm, Guatemala).—SALVIN, Ibis, 1861, 353 (Chiséc, centr. Guatemala); Proc. Zool. Soc. Lond., 1866, 75 (Mexico; Guatemala; monogr.).—SUMICHRIST, Mem. Bost. Soc. N. H., i, 1869, 556 (hot region Vera Cruz, up to 800 m.; habits; notes); La Naturaleza, v, 1881, 248 (do.).—SAL-

<sup>a</sup> Nine specimens.

<sup>b</sup> Three specimens.

| Locality.                                       | Wing. | Tail. | Culmen. | Tarsus. | Middle toe. |
|-------------------------------------------------|-------|-------|---------|---------|-------------|
| MALES.                                          |       |       |         |         |             |
| Eight adult males from southeastern Mexico..... | 90.8  | 53.2  | 21.3    | 31.9    | 20          |
| One adult male from Guatemala.....              | 89    | 50    | 21      | 30.5    | 19.5        |
| FEMALES.                                        |       |       |         |         |             |
| Two adult females from southeastern Mexico..... | 87.5  | 52.3  | 20.7    | 30      | 20          |
| One adult female from Guatemala.....            | 92.5  | 56    | 20      | 33      | 20          |



VIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 233, part (Córdova, Cerro de la Defensa, Atoyac, and Playa Vicente, Vera Cruz; Vera Paz, Chisec, Kampamác, Choctúm, and Tactic, Guatemala).—RIDGWAY, Proc. U. S. Nat. Mus., xvi, 1893, 683 (monogr.).

[*Formicarius*] *moniliger* SCLATER, Proc. Zool. Soc. Lond., 1857, 47, in text.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 75, part.—SHARPE, Hand-list, iii, 1901, 39, part (s. Mexico; Guatemala).

*Myrmornis moniliger* CABANIS, Journ. für Orn., 1861, 96.

[*Myrmornis*] *moniliger* HEINE and REICHENOW, Nomencl. Mus. Hein. Orn., 1890, 124 (Mexico).

*Formicarius moliniger* BOUCARD, Ann. Soc. Linn. Lyon, 1878, 49 (Guatemala).

### FORMICARIUS MONILIGER INTERMEDIUS Ridgway.

#### INTERMEDIATE ANTTHRUSH.

Much paler and less rufescent above than *F. m. moniliger*, darker and more rufescent than *F. m. pallidus*;<sup>a</sup> under parts pale as in *F. m. pallidus*, but the color decidedly clearer (less buffy) gray.

*Adult male*.—Length (skins), 163–180 (170); wing, 86–91 (88); tail, 51–58 (54); culmen, 19.5–22 (21); tarsus, 30–32 (31); middle toe, 19–20.5 (19.9).<sup>b</sup>

*Adult female*.—Length (skin), 169.5; wing, 90; tail, 51.5; culmen, 20; tarsus, 30.5; middle toe, 19.<sup>c</sup>

British Honduras (forest near Manatee Lagoon; Manatee River; Toledo District; Cayo).

*Formicarius moniliger* (not of Sclater, 1856) SCLATER, Cat. Birds Brit. Mus., xv, 1890, 303, part (Brit. Honduras).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 233, part (Cayo, Brit. Honduras).

[*Formicarius*] *moniliger* SHARPE, Hand-list, iii, 1901, 39, part (Brit. Honduras).

*Formicarius moniliger intermedius* RIDGWAY, Proc. Biol. Soc. Wash., xxi, Oct. 20, 1908, 194 (forest near Manatee Lagoon, British Honduras; coll. Carnegie Mus.).

*Formicarius monileger* LANTZ, Trans. Kansas Acad. Sci. for 1896–97 (1899), 221 (Cayo, Brit. Honduras).

### FORMICARIUS MONILIGER PALLIDUS (Lawrence).

#### YUCATAN ANTTHRUSH.

Similar to *F. m. intermedius* but coloration still paler, the general color of upper parts light olive-brown (between broccoli brown and isabella color, brightening into raw-umber on upper tail-coverts), the abdominal region (extensively) grayish white or very pale buffy gray.

<sup>a</sup> In *F. m. moniliger* the color of the back varies from bright mummy brown to chestnut-brown; in *F. m. intermedius* it is deep raw-umber, while in *F. m. pallidus* it is light olive-brown or between broccoli brown and isabella color. In *F. m. pallidus* the color of the chest is drab-gray, in *F. m. intermedius* mouse gray.

<sup>b</sup> Four specimens.

<sup>c</sup> One specimen.

*Adult (sex not determined).*—Length (skin), 173.5; wing, 93; tail, 55; culmen, 22; tarsus, 31; middle toe, 20.

Yucatan (Tizimin).

*Furnarius pallidus* LAWRENCE, Ann. N. Y. Acad. Sci., ii, no. 9, May 29, 1882, 288 (Yucatan; coll. G. N. Lawrence).

*Formicarius pallidus* LAWRENCE, Ann. N. Y. Acad. Sci., ii, no. 9, 1882 (index).—

BOUCARD, Proc. Zool. Soc. Lond., 1883, 450 (Tizimin, Yucatan; crit.).—

REICHENOW and SCHALOW, Journ. für Orn., 1884, 388 (reprint of orig. descr.).—RIDGWAY, Proc. U. S. Nat. Mus., xvi, 1893, 684 (monogr.).

[*Formicarius*] *pallidus* SHARPE, Hand-list, iii, 1901, 39.

*F[ormicarius] m[oniliger] pallidus* RIDGWAY, Proc. Biol. Soc. Wash., xxi, Oct. 20, 1908, 194, in text.

[*Myrmornis*] *pallidus* HEINE and REICHENOW, Nomencl. Mus. Hein. Orn., 1890, 124.

*Formicarius moniliger* (not of Sclater, 1856) SCLATER, Cat. Birds Brit. Mus., xv, 1890, 303, part (Tizimin, Yucatan).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 233, part (Tizimin).

### FORMICARIUS MONILIGER UMBROSUS (Ridgway).

#### NICARAGUAN ANTHTHRUSH.

Similar to *F. m. moniliger* but without any chestnut across foreneck, the black of throat giving way, more or less abruptly, on chest to dull slate color or sooty gray; under tail-coverts darker, more castaneous, brown; terminal portion of auricular region, together with supra-auricular region (sides of occiput) and sides of neck, varying from chestnut to vinaceous-cinnamon.

*Young.*—Much like adults but malar region, chin, and throat dull whitish or buffy, transversely mottled or barred with dusky, or else uniform dull sooty blackish; whitish abdominal area transversely spotted or clouded with grayish dusky.

*Adult male.*—Length (skins), 158–180 (164); wing, 86–93 (90.2); tail, 49.5–57 (53.7); culmen, 19–23.5 (21.4); tarsus, 31–36 (33.5); middle toe, 18–20.5 (19.1).<sup>a</sup>

*Adult female.*—Length (skins), 146–170 (161); wing, 86–91.5 (88.3); tail, 48–55 (51.7); culmen, 19–22 (20.3); tarsus, 31.5–33.5 (32.3); middle toe, 17.5–20 (18.8).<sup>b</sup>

<sup>a</sup> Fourteen specimens.

<sup>b</sup> Twelve specimens.

| Locality.                                      | Wing. | Tail. | Culmen. | Tarsus. | Middle toe. |
|------------------------------------------------|-------|-------|---------|---------|-------------|
| MALES.                                         |       |       |         |         |             |
| Ten adult males from eastern Costa Rica.....   | 90.6  | 54.4  | 20.9    | 33.9    | 19.2        |
| Four adult males from Nicaragua.....           | 89    | 52.1  | 22.5    | 32.6    | 18.9        |
| FEMALES.                                       |       |       |         |         |             |
| Ten adult females from eastern Costa Rica..... | 88    | 51.4  | 20.1    | 29      | 18.7        |
| Two adult females from Nicaragua.....          | 89.7  | 53    | 21.3    | 32.3    | 19.3        |

Eastern and northern Costa Rica (Talamanca; Bonilla; Jiménez; Rio Matina; Cuábree; Guácimo; Guápiles; La Vijagua; La Florida; Volcan de Miravalles; Pacuare; San Carlos) and Nicaragua (Mosquito coast; Los Sábalos; Rio Escondido; San Emilis, Lake Nicaragua).

*Formicarius moniliger* (not of Sclater, 1856) SCLATER, Proc. Zool. Soc. Lond., 1858, 278, part (Mosquito coast, Nicaragua).

*Formicarius hoffmanni* (not *Myrmornis hoffmanni* Cabanis) BOUCARD, Proc. Zool. Soc. Lond., 1878, 62 (San Carlos, Costa Rica; habits).—ZELEDÓN, Proc. U. S. Nat. Mus., viii, 1885, 108 (Costa Rica); Anal. Mus. Nac. Costa Rica, 1887, 115, part (Jiménez, Costa Rica).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 234, part (Los Sábalos, Nicaragua; San Carlos, Jiménez, and Pacuare, Costa Rica).—RICHMOND, Proc. U. S. Nat. Mus., xvi, 1893, 502 (Rio Escondido, Nicaragua; habits).

*Formicarius hoffmanni* NUTTING, Proc. U. S. Nat. Mus., vi, 1883, 405 (Los Sábalos, Nicaragua; habits; notes).

[*Formicarius*] *hoffmanni* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 75, part.

*Formicarius umbrosus* RIDGWAY, Proc. U. S. Nat. Mus., xvi, no. 961, Nov. 28, 1893, 681 (Talamanca, Costa Rica; coll. U. S. Nat. Mus.).—UNDERWOOD, Ibis, 1896, 441 (Volcan de Miravalles, Costa Rica; habits; notes).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 624 (Caribbean and northern Pacific lowlands of Costa Rica, up to 1,200 ft.; habits; descr. nest and eggs).

[*Formicarius*] *umbrosus* SHARPE, Hand-list, iii, 1901, 39.

### FORMICARIUS MONILIGER HOFFMANNI (Cabanis.)

#### HOFFMANN'S ANTHRUSH.

Similar to *F. m. umbrosus*, but under tail-coverts clear tawny or tawny-chestnut (as in *F. m. panamensis*), and black of throat usually more sharply defined and abruptly contrasted with the dark slate color of chest. Differing from *F. m. panamensis* in larger size and less brownish coloration.<sup>a</sup>

*Adult male*.—Length (skins), 153–173 (163); wing, 90–98.5 (93.5); tail, 51.5–56.5 (54.1); culmen, 19.5–23 (21.2); tarsus, 31.5–34 (33.5); middle toe, 19–21.5 (20.4).<sup>b</sup>

*Adult female*.—Length (skins), 155–170 (161); wing, 88–95 (91); tail, 47–55 (51.1); culmen, 21–22.5 (21.7); tarsus, 31.5–34.5 (33.5); middle toe, 19–20.5 (19.9).<sup>b</sup>

As in the young of *F. m. umbrosus*, the young of this form frequently have the malar region, chin, and throat white barred or transversely spotted with black.

<sup>a</sup> As in *F. m. panamensis*, there is in this form sometimes a more or less distinct indication of a chestnut or russet collar across the lower throat. Such specimens may be easily distinguished from *F. m. moniliger* by the very different color of the under tail-coverts (clear tawny or tawny-chestnut instead of light olive-brown and dusky), and much lighter, as well as more extended, color (deep vinaceous-cinnamon to cinnamon-rufous, instead of dull chestnut) of sides of neck and occiput and terminal portion of auricular region.

<sup>b</sup> Ten specimens, from Costa Rica.



Southwestern Costa Rica (Pozo del Rio Grande, Paso Real, Lagarto, Boruca, and Barranca, Boruca; Buenos Aires; El General; Pozo del Pitál, Rio Naranjo; Pozo de Terraba; Pozo Azul de Pirris; Las Trojas) and western Panamá (Divala; Bugaba; Chiriquí).

*Myrmornis hoffmanni* CABANIS, Journ. für Orn., Mar., 1861, 95 (Costa Rica; coll. Berlin Mus.).

*Formicarius hoffmanni* LAWRENCE, Ann. Lyc. N. Y., ix, 1868, 110 (Costa Rica).—FRANTZIUS, Journ. für Orn., 1869, 306 (Costa Rica).—SALVIN, Proc. Zool. Soc. Lond., 1866, 75, part (Costa Rica); 1870, 195 (Bugaba, Panamá).—ZELEDÓN, Anal. Mus. Nac. Costa Rica, i, 1878, 115, part (Las Trojas and Pozo Azul de Pirris, Costa Rica).—SCLATER, Cat. Birds Brit. Mus., xv, 1890, 304, part (Bugaba, Verágua, and Chiriquí, Panamá).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 234, part (Las Trojas, Costa Rica; Chiriquí and Bugaba, Panamá).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 623 (s. w. Costa Rica, up to 1,500 ft.; crit.; habits).

[*Formicarius*] *hoffmanni* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 75, part (Costa Rica).—SHARPE, Hand-list, iii, 1901, 39, part (s. w. Costa Rica).

*Formicarius hoffmanni hoffmanni* BANGS, Auk, xxiv, July, 1907, 298 (Boruca, Paso Real, Pozo del Rio Grande, Lagarto, and Barranca, s. w. Costa Rica; crit.).

[*Formicarius*] *moniliger hoffmanni* RIDGWAY, Proc. Biol. Soc. Wash., xxi, Oct. 20, 1908, 195, in text.

*Formicarius umbrosus* (not of Ridgway) BANGS, Auk, xviii, 1901, 366 (Divala, Panamá).

#### FORMICARIUS MONILIGER PANAMENSIS Ridgway.

##### PANAMÁ ANTTHRUSH.

Similar to *F. m. hoffmanni* but averaging smaller, and coloration much lighter, the under parts more strongly suffused with olive and buffy, and color of under tail-coverts lighter, more tawny; black gular area more frequently(?) bordered posteriorly with a more or less distinct collar of deep vinaceous-cinnamon or dull cinnamon-rufous, or indication of one.

*Adult male*.—Length (skins), 153–172 (162); wing, 86–88 (87); tail, 50–55 (52.4); culmen, 20.5–21.5 (20.7); tarsus, 30–32 (30.9); middle toe, 18–19.5 (18.9).<sup>a</sup>

*Adult female*.—Length (skins), 144–161 (154); wing, 84–88.5 (86.9); tail, 48–51.5 (49.7); culmen, 18.5–20.5 (19.9); tarsus, 30–32 (31); middle toe, 17–20 (18).<sup>a</sup>

Eastern Panamá (Lion Hill, Obispo, and Paraiso stations, Panamá railway; Chepo; Laguna del Pita; Cascajal, Coclé); Colombia (Remédios, Antioquia) ?

*Formicarius analis* (not *Myothera analis* Lafresnaye) LAWRENCE, Ann. Lyc. N. Y., vii, 1862, 326 (Lion Hill station, Panamá).

*Formicarius hoffmanni* (not *Myrmornis hoffmanni* Cabanis) SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1864, 357 (Lion Hill, Panamá);(?) 1879, 526 (Remé-

<sup>a</sup> Four specimens.

dios, Antioquia, Colombia).—SALVIN, Proc. Zool. Soc. Lond., 1866, 75, part (Panamá; monogr.).—SCLATER, Cat. Birds Brit. Mus., xv, 1890, 304, part (Panamá and Chepo, Panamá).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 234, part (Lion Hill, Obispo, and Paraiso stations, and Chepo, Panamá; Colombia?).—RIDGWAY, Proc. U. S. Nat. Mus., xvi, 1893, 679, part (monogr.).—SALVADORI and FESTA, Boll. Mus. Zool., etc., Torino, xiv, 1899, no. 339, 7 (Laguna del Pita, Panamá).—BANGS, Proc. New Engl. Zool. Club, ii, 1900, 24 (Loma del Leon, Panamá).

[*Formicarius*] *hoffmanni* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 75, part (Panamá).—SHARPE, Hand-list, iii, 1901, 39, part (Panamá; Colombia?).

*Formicarius moniliger panamensis* RIDGWAY, Proc. Biol., Soc. Wash., xxi, Oct. 20, 1908, 195 (Lion Hill station, Panamá; coll. U. S. Nat. Mus.).

## FORMICARIUS RUFPECTUS Salvin.

### RUFOUS-BREASTED ANTHRUSH.

*Adult male.*<sup>a</sup>—Pileum and hindneck dark chestnut, the feathers dull black beneath the surface (partly exposed on crown); rest of upper parts dark olive or olive-sepia, passing into deep reddish chestnut or bay on upper tail-coverts; tail dull black, the rectrices edged (especially toward base) with olive-brown; remiges, primary coverts, and alula dark sooty brown; loreal, orbital, auricular, sub-orbital and malar regions, chin, and throat uniform black; whole chest uniform chestnut, passing into tawny-chestnut on breast, this into tawny on abdomen, the chestnut of chest extended laterally as a narrow band behind auricular region to merge into the dark chestnut of hindneck; sides and flanks olive, indistinctly streaked on inner portion with dull tawny or tawny-chestnut; under tail-coverts bright chestnut; bill black; iris brown; legs and feet dark horn color; length (skin), 182; wing, 90; tail, 56; culmen, 21; tarsus, 38.5; middle toe, 23.<sup>b</sup>

*Adult female.*<sup>c</sup>—Similar to the adult male, as described above, but color of back, etc., less olivaceous (more slaty) sides and flanks dull slate color or dark mouse gray instead of olive, and chestnut of chest lighter (tawny-chestnut), passing through tawny or tawny-olivaceous on lower breast into deep buff or clay color on abdomen; under tail-coverts also lighter chestnut; length (skin), 163.5; wing, 88.5; tail, 56.5; culmen, 23.5; tarsus, 38; middle toe, 23.

Western Panamá (Santiago de Veragua); Costa Rica (Juan Viñas); northwestern Colombia (San Antonio)?

<sup>a</sup> Description from no. 28,203, Carnegie Museum; Juan Viñas, Costa Rica (Atlantic slope), May 7, 1907; M. A. Carriker, jr. (Type of *Formicarius castaneiceps* Carriker.)

<sup>b</sup> One specimen (type of *F. castaneiceps* Carriker).

<sup>c</sup> Described from no. 20,656, coll. E. A. and O. Bangs; San Antonio, Rio Cali, northwestern Colombia; Nov. 8, 1907; Mervyn G. Palmer. (Possibly representing a distinct subspecies).

*Formicarius rufipectus* <sup>a</sup> SALVIN, Proc. Zool. Soc. Lond., 1866, 73, pl. 8 (Santiago de Veragua, Panamá; coll. Salvin and Godman); 1867, 145 (Santiago de Veragua; habits).—SCLATER, Cat. Birds Brit. Mus., xv, 1890, 306, part (Veragua, Panamá).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 235, part (Santiago de Veragua).—RIDGWAY, Proc. U. S. Nat. Mus., xvi, 1893, 685 part (Santiago de Veragua; monogr.).—BANGS, Proc. Biol. Soc. Wash., xxi, 1908, 157 ([San Antonio], n. w. Colombia).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 625 (Juan Viñas, e. Costa Rica; crit.).

*[Formicarius] rufipectus* SALVIN, Proc. Zool. Soc. Lond., 1866, 74.

*[Formicarius] rufipectus* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 75.—SHARPE, Hand-list, iii, 1901, 39, part (Panamá).

*Formicarius castaneiceps* CARRIKER, Ann. Carnegie Mus., iv, April 1, 1908, 301 (Juan Viñas, Costa Rica; coll. Carnegie Mus.).

### Genus HYLOPHYLAX Ridgway.

*Hylophylax* <sup>b</sup> RIDGWAY, Proc. Biol. Soc. Wash., xxii, Apr. 17, 1909, 70. (Type, *Conopophaga nævioides* Lafresnaye.)

Small Formicariidæ (length about 100 mm.) with second phalanx of middle toe partly united to outer toe, outstretched feet reaching to beyond tip of tail, tail not more than three-fifths as long as wing, planta tarsi fused (nonscutellate) and acrotarsium indistinctly scutellate.

Bill shorter than head (sometimes nearly as long), rather stout, rather broad and depressed basally, with straight or (in part) even slightly convex lateral outlines, its width at frontal antiæ much greater (sometimes twice as great) as its height at same point and equal to from a little less than half to a little more than two-thirds the distance from nostril to tip of maxilla; culmen distinctly ridged, nearly straight basally (sometimes for most of its length), gradually to rather abruptly decurved terminally, the tip of maxilla slightly but distinctly uncinatè; maxillary tomium straight or slightly concave, minutely but distinctly notched subterminally; mandibular tomium straight or faintly convex, minutely notched subterminally, the tip of mandible forming a short, more or less recurved, point; gonys more or less strongly convex and prominent basally, more gently convex and more or less decidedly ascending terminally. Nostril exposed, more or less widely separated from feathering of latero-frontal antiæ (nearly in contact with the latter in *H. nævioides*), longitudinally ovate, more or less pointed anteriorly, margined above

<sup>a</sup> The following citations of *F. rufipectus* refer to a different form:

*Formicarius rufipectus* (not of Salvin) Sclater, Cat. Birds Brit. Mus., xv, 1890, 306, part (Baisa, w. Ecuador).—Salvin and Godman, Biol. Centr.-Am., Aves, ii, 1892, 235 (Baisa, w. Ecuador).—Salvadori and Festa, Boll. Mus. Zool., etc., Torino, xv, 1899, no. 362, 33 (Gualea, w. Ecuador).—Menegaux and Hellmayr, Bull. Soc. Philom., 1906, 52 (Esmeraldas, Pachijál, and Oyacachi, w. Ecuador; crit.).

<sup>b</sup> ὕλη, a wood, forest; φύλαξ, a watcher, guard, sentinel.



(at least posteriorly) by an extension of the membranous integument of the nasal fossæ, an internal tubercle or facet visible within the posterior portion. Rictal bristles present, but inconspicuous; feathers of chin, malar antiæ, and loreal region with distinct terminal setæ. Wing moderate or rather large, with longest primaries extending decidedly beyond secondaries; sixth and seventh, or seventh, primaries longest, the tenth (outermost) three-fifths as long as the longest, or slightly more, the ninth equal to or slightly longer than secondaries. Tail slightly more than one-half to three-fifths as long as wing, slightly rounded, the rectrices (12) rather broad, rounded terminally. Tarsus much longer than whole culmen, a little less than two-fifths as long as wing, the acrotarsium indistinctly scutellate (scutella sometimes obsolete except on lower portion), the planta fused, at least for greater part; middle toe, with claw, much shorter than tarsus; outer toe, without claw, reaching to about middle of subterminal phalanx of middle toe, the inner toe decidedly shorter; hallux equal to or slightly longer than inner toe; basal phalanx of middle toe wholly united, the second phalanx partly united, to outer toe (the adhesion involving the first two phalanges of outer toe), united for half its length or more to inner toe; claws rather large, moderately curved, extremely compressed, that of the hallux shorter than the digit (but sometimes nearly as long). Plumage full, soft, and blended, that of rump and flanks more elongated and lax; feathers of pileum not elongated.

*Coloration*.—Adult males gray and black above, the back with white spots or lunulate bars, the wing-coverts, tertials, and tail tipped with white; or back rufous or chestnut, with a concealed patch of white, the wing-coverts, tertials, and tail tipped with cinnamon-rufous; throat black, rest of under parts white, passing into gray or buffy on flanks, the chest spotted with black, or whole under parts plain gray. Adult females somewhat like males, but browner above with markings fulvous or buffy instead of white, the throat whitish, and black markings of chest replaced by brownish, or (in slate-colored species) head and under parts rufescent or the general color of under parts gray, with white throat and dusky flanks.<sup>a</sup>

*Range*.—Costa Rica to western Ecuador, Amazon Valley, and Guiana. (Six species.?)<sup>b</sup>

<sup>a</sup> On account of insufficiency of material, I am not able to give the full range of color variation in this group.

<sup>b</sup> Of the species referred to the genus *Hypocnemis* by Dr. Sclater and other recent authors I have seen in this connection only *H. cantator* (type of the genus), *H. pœcilonota* (Cuvier), *H. lepidonota* Sclater and Salvin, *H. leucophrys* (Tschudi), *H. myiotherina* (Spix), *H. lugubris* (Cabanis and Heine), *H. nævia* (Gmelin), and *H. nævioides* (Lafresnaye). The second, third, seventh, and eighth of these I have removed from *Hypocnemis* on account of the very different amount of adhesion of the anterior toes

## HYLOPHYLAX NÆVICIDES (Lafresnaye).

## SPOTTED ANTIBIRD.

*Adult male*.—Pileum and hindneck grayish brown or olive-brown, passing into gray laterally and on forehead, the feathers usually with darker shaft-streaks and terminal margins; back plain chestnut, the feathers extensively white basally; scapulars, rump, and upper tail-coverts plain russet-brown, the first tinged with chestnut; wing-coverts black, the lesser with terminal spots of white (those along anterior margin mostly white), the middle and greater coverts very broadly tipped with cinnamon-rufous, forming two very conspicuous bands; remiges dull black, the outer web and tip of tertials largely cinnamon (more or less deep) or dull cinnamon-rufous, the secondaries and primaries with outer half or more of outer web light brown or grayish brown; tail grayish brown (deep drab or broccoli brown to sepia), the rectrices tipped with pale cinnamon (sometimes whitish on outermost) and crossed by a band (more or less broad) of dull black; sides of head plain dull slate-gray or slate color, like superciliary region and forehead; malar region, chin, and throat uniform black; rest of lower parts white, passing into buffy gray on flanks and pale brownish buff on under tail-coverts, the latter sometimes brownish beneath surface; upper breast and anterior portion of sides heavily spotted with black, separating the immaculate white jugular and pectoral areas; bill black, the mandible sometimes more brownish; legs and feet light horn color (in dried skins); length (skins), 96–113 (106); wing, 61–65.5 (63.1); tail, 32–36 (35); culmen, 16–17.5 (16.7); tarsus, 21.5–23 (22.4); middle toe, 13.5–16 (14.5).<sup>a</sup>

*Adult female*.—Above much as in adult male, but pileum and hindneck decidedly browner (deep broccoli brown to prouts brown), back duller chestnut, rump and upper tail-coverts more rufescent brown, and markings on larger wing-coverts and tertials tawny or ochraceous instead of cinnamon-rufous; under parts very different, however, the chin and throat white or buffy, like chest, upper breast spotted (less heavily) with olive or grayish instead of black, and whole sides and flanks olive or buffy olive; mandible dull whitish (in dried skins); length (skins), 98–114 (108); wing, 59.5–64.5 (62.1); tail, 30–35

and other excellent structural characters, while the fourth, fifth, and sixth I also remove as a distinct genus, *Myrmoborus* Cabanis and Heine. (See p. 14.)

There is much difference in the form of the bill between the three species of *Hylophylax* which I now have before me, *H. nævia* having this member very broad and very much depressed basally, while that of *H. pacilonota* is much narrower, less depressed, and with the base of the gonys more prominent, *H. nævioides* being, however, intermediate between these extremes.

<sup>a</sup> Seventeen specimens.

(33.4); culmen, 16–17 (16.7); tarsus, 21.5–23 (22.4); middle toe, 14–15 (14.6).<sup>a</sup>

*Immature male*.—Similar in coloration to adult female.

Nicaragua (Rio Escondido; San Emilis, Lake Nicaragua), Costa Rica (Tucurríqui; Angostura; Pacuare; Jiménez; Rio Reventazón; Rio Sísola; Sipúrio; Orosí; San Carlos; Volcan de Turrialba; Volcan de Miravalles; Cuábre; Carrillo; Guácimo; Guápiles; La Concepción; La Cristina; La Vijágua; Tenório; Cerro Santa Maria; Panamá (Lion Hill; Paraiso; Chepo; Panamá; Sabana de Panamá), Colombia (Rio Atrato; Rio Truando; Truando Falls) and western Ecuador (Esmeraldas; Chimbo; Foreste del Rio Peripa; San Javier).<sup>b</sup>

*Conopophaga navioides* LAFRESNAYE, Rev. Zool., 1847, 69 (type locality not given; Bolivia, Colombia, and Panamá; coll. Acad. Nat. Sci. Philad.).

[*Conopophaga*] *navioides* BONAPARTE, Consp. Av., i, 1850, 203.

*Hypocnemis navioides* SCLATER, Proc. Zool. Soc. Lond., 1858, 254 (monogr.); 1860, 294 (Esmeraldas, w. Ecuador); Cat. Am. Birds, 1862, 189 (Esmeraldas, w. Ecuador); Cat. Birds Brit. Mus., xv, 1890, 293 (Tucurríqui and Angostura, Costa Rica; Paraiso Station, Chepo, and Panamá, Panamá; Esmeraldas, w. Ecuador).—CASSIN, Proc. Ac. Nat. Sci. Phila., 1860, 190 (Rio Truando, Colombia).—LAWRENCE, Ann. Lyc. N. Y., vii, 1862, 326 (Lion Hill, Panamá); ix, 1868, 109 (Angostura and Turrialba, Costa Rica).—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1864, 357 (Lion Hill).—BERLEPSCH and TACZANOWSKI, Proc. Zool. Soc. Lond., 1883, 566 (Chimbo, w. Ecuador).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 231.—RICHMOND, Proc. U. S. Nat. Mus., xvi, 1893, 502 (Rio Escondido, Nicaragua).—UNDERWOOD, Ibis, 1896, 440 (Volcan de Miravalles, Costa Rica).—SALVADORI and FESTA, Boll. Mus. Zool., etc., Torino, xv, 1899, no. 362, 32 (Foreste del Rio Peripa, w. Ecuador).—BANGS, Proc. New Engl. Zool. Club, ii, 1900, 24 (Loma del León, Panamá).—HARTERT, Novit. Zool., ix, 1902, 613 (San Javier, n. w. Ecuador).—THAYER and BANGS, Bull. Mus. Comp. Zool., xlii, 1906, 217 (Sabana de Panamá).

[*Hypocnemis*] *navioides* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 74.—SHARPE, Hand-list, iii, 1901, 37.

<sup>a</sup> Fourteen specimens.

| Locality.                                    | Wing. | Tail. | Culmen. | Tarsus. | Middle toe. |
|----------------------------------------------|-------|-------|---------|---------|-------------|
| MALES.                                       |       |       |         |         |             |
| Six adult males from eastern Panamá.....     | 62.9  | 34.9  | 16.7    | 22.3    | 15.1        |
| Ten adult males from Costa Rica.....         | 63.2  | 34.1  | 16.6    | 22.3    | 14.1        |
| One adult male from Nicaragua.....           | 64.5  | 35    | .....   | 23      | 14.5        |
| FEMALES.                                     |       |       |         |         |             |
| Three adult females from eastern Panamá..... | 62.6  | 33.8  | 16.6    | 22.3    | 14.1        |
| Ten adult females from Costa Rica.....       | 62    | 33.1  | 16.8    | 22.4    | 14.5        |
| One adult female from Nicaragua.....         | 62    | 34    | 16      | 23      | 15          |

<sup>b</sup> I have not seen a specimen from Ecuador.



- Hypocnemis naevoides* FRANTZIUS, Journ. für Orn., 1869, 306 (Costa Rica).  
*Hypocnemis naevoides* ZELEDÓN, Anal. Mus. Nac. Costa Rica, i, 1887, 115 (Jiménez, Pacuare, and Angostura, Costa Rica).  
*Hylophylax naevioides* CARRIKER, Ann. Carnegie Mus., vi, "Aug. 29" (=Sept. 7), 1910, 619 (Costa Rica; crit.; habits).  
*Hypocnemis naevioides capnitis* BANGS, Proc. Biol. Soc. Wash., xix, July 30, 1906, 107 (Volcan de Miravalles, n. w. Costa Rica; coll. E. A. and O. Bangs).

Genus ANOPLOPS Cabanis and Heine.

- Gymnophilys* "Schiff" BONAPARTE, Ann. Sci. Nat., sér. iv, i, 1854, 132. (Type not mentioned; *nomen nudum*.)  
*Anoplops* <sup>a</sup> CABANIS and HEINE, Mus. Hein., ii, July, 1859, 9. (Type, *Turdus rufigula* Boddaert.)

Medium-sized Formicariidæ (length about 135–145 mm.) with second phalanx of middle toe partly united to outer toe, tail less than two-thirds (scarcely more than three-fifths) as long as wing, sub-orbital and postocular regions naked, outstretched feet reaching little if any beyond tip of tail, and plain coloration.

Bill shorter than head, narrow, wedged shaped in vertical profile (lateral outlines nearly straight), its width at frontal antiæ equal to or greater than its depth at same point and equal to half the distance from nostril to tip of maxilla, or less; culmen distinctly ridged, straight to near tip, where abruptly decurved, the tip of maxilla more or less distinctly (but not strongly) uncinatè; tomia straight, slightly but distinctly notched subterminally; gonys strongly convex and prominent basally, gently or faintly convex and ascending terminally. Nostril exposed, posteriorly in contact with feathering of loreal antiæ, narrow and longitudinally ovate (slit-like in *A. rufigula*) overhung by a broad membranous operculum. Rictal bristles obsolete. Wing moderate or rather large, with longest primaries projecting decidedly beyond secondaries; sixth and seventh, or sixth, seventh and eighth, primaries longest, the tenth (outermost) about three-fifths as long as the longest, the ninth about as long (sometimes a little longer or shorter than) secondaries. Tail slightly more than three-fifths as long as wing, slightly rounded, the rectrices (12) rather narrow (*A. rufigula*) to rather broad (*A. bicolor*, etc.), rounded terminally. Tarsus about one-third as long as wing, booted (nonscutellate) or with scutella of acrotarsium very indistinct; middle toe, with claw, nearly as long as tarsus; outer toe, without claw, not reaching to middle of subterminal phalanx of middle toe, the inner toe slightly shorter; hallux about as long as inner toe but much stouter; middle toe united for whole of basal and part of second phalanx to outer toe, for half or more of basal phalanx to inner toe; claws rather large and strongly curved, that of the hallux decidedly shorter than the digit. Plumage full and blended, that of rump and flanks more elongated and lax; feathers

<sup>a</sup> "Von ἀνοπλος (unbewaffnet) und ὤψ (Gesicht)." (Cabanis and Heine.)

of pileum short; anteorbital and postocular regions (*A. rufigula*) or suborbital, postocular, and lower portion of loreal regions (*A. bicolor* and allies) naked; latero-frontal feathers short and erect (denser, more plush-like in *A. rufigula*).

*Coloration*.—Plain brown or olive, with throat tawny or rufescent, or with throat and median under parts white;<sup>a</sup> sexes alike or nearly so.

*Range*.—Honduras to Amazon Valley and Cayenne. (Eleven or more species recognized.<sup>b</sup>)

#### KEY TO THE SPECIES OF ANOPOLOPS.

a. Underparts brown (no white), becoming tawny or rufous on throat and auricular region. (British Guiana to lower Amazon Valley.)

*Anoplops rufigula* (extralimital).<sup>c</sup>

aa. Underparts broadly white medially, including throat; auricular region black or dusky.

b. Above bright tawny-chestnut, more rufescent on forehead.

c. Sides and flanks chestnut or rufous-chestnut. (Colombia.)

*Anoplops ruficeps* (extralimital).<sup>d</sup>

cc. Sides and flanks olive-brown, becoming slate-grayish next to white of breast, etc. (Colombia and upper Amazon Valley.)

*Anoplops leucaspis* (extralimital).<sup>e</sup>

bb. Above vandyke brown, not more rufescent on forehead.

c. Forehead and postauricular regions slate color. (Eastern Panamá.)

*Anoplops bicolor* (p. 132).

cc. Forehead and postauricular region brown, like pileum, etc. (Western Panamá to eastern Honduras.).....*Anoplops olivascens* (p. 132).

<sup>a</sup> *A. lunulata* (Sclater and Salvin), a species which I have not seen, has black and ochraceous lunulations on the back, and whitish spots on inner webs of rectrices.

<sup>b</sup> Of these I have not seen the following: *A. lunulata* (Sclater and Salvin), *A. salvini* (Berlepsch), *A. griseiventris* (Pelzeln), *A. cristata* (Pelzeln), *A. berlepschi* Sneath-lago, *A. hoffmannsi* Hellmayr, *A. pallidus* Cherrie, and *A. melanosticta* (Sclater and Salvin). *Anoplops lunulata* differs from *A. bicolor* and its allies in more slender bill, much narrower and more broadly operculate nostrils, and very much denser as well as longer feathering of the loreal region. The style of coloration is somewhat different, there being no white on the under parts, the chin and throat being rufous-tawny and the under parts of the body brown. The naked skin on sides of head, together with the legs and feet, are yellow, instead of blue and dusky horn color, respectively, as in *A. bicolor*, etc.

<sup>c</sup> *Turdus rufigula* Boddaert, Tabl. Pl. Enl., 1783, 39 (based on *Petit merle brun à gorge rousse de Cayenne* Daubenton, Pl. Enl., pl. 644, fig. 2).—*Anoplops rufigula* Cabanis, Wiegmann's Archiv für Naturg., 1847, pt. i, 214.—*Pithys rufigula* Sclater, Proc. Zool. Soc. Lond., 1858, 273.—*Gymnopathys rufigula* Sclater, Cat. Birds Brit. Mus., xv, 1890, 297.—*Turdus pectoralis* Latham, Index Orn., i, 1790, 357.—*Myiothera pectoralis* Temminck, Tabl. Méth., 183—?, 17.—*Myrmothera pectoralis* Lesson, Traité d'Orn., 1831, 396.

<sup>d</sup> *Gymnopathys ruficeps* Salvin and Godman, Biol. Centr.-Am., Aves, ii, sig. 28, Feb., 1892, 222, footnote (Cauca Valley, Colombia; coll. Brit. Mus.).

<sup>e</sup> *Myrmecia leucaspis* Sclater, Proc. Zool. Soc. Lond., 1855 (pub. Apr. 11), 253, aves, pl. 70 (Chamicuro, e. Peru; coll. J. Gould).—*Pithys leucaspis* Sclater, Proc. Zool. Soc. Lond., 1858, 274; Cat. Birds Brit. Mus., xv, 1890, 295.—*G[ympnopathys] leucaspis* Salvin and Godman, Biol. Centr.-Am., Aves, ii, sig. 28, Feb., 1892, 221, in text.

## ANOPLOPS BICOLOR (Lawrence).

## BICOLORED ANTBIRD.

*Adults (sexes alike).*—Above plain chestnut-brown or vandyke brown, the forehead, lores, and sides of occiput slate color or slate-gray, the hindneck partly the same color; malar, suborbital, and auricular regions black; sides of neck and thence to flanks (broadly) lighter brown (prouts brown to nearly sepia), sometimes with indistinct dusky spots or streaks along outer edge, especially on sides of neck; chin, throat, chest, breast, and abdomen immaculate white; under tail-coverts brown (like flanks), tipped or margined with whitish or buffy; maxilla blackish, paler (sometimes dull whitish in dried skins) terminally and along tomium; mandible dull whitish or pale dull yellowish (in dried skins), darker basally; legs and feet horn color (in dried skins).

*Adult male.*—Length (skins), 136–139 (138); wing, 74.5–79.5 (76.8); tail, 45.5–52 (47.8); culmen, 18.5–20.5 (19.5); tarsus, 27–28.5 (27.7); middle toe, 17.5–19 (18.2).<sup>a</sup>

*Adult female.*—Length (skins), 125–126 (125.5);<sup>b</sup> wing, 73–74 (73.5);<sup>b</sup> tail, 47–47.5 (47.2);<sup>b</sup> culmen, 18.5;<sup>c</sup> tarsus, 26.5;<sup>c</sup> middle toe, 17.<sup>c</sup>

Panamá (Lion Hill; Chepo; Paraiso; Panamá; Cascajal, Coclé; Santa Fé de Verágua).

*Pithys leucaspis* (not *Myrmeciza leucaspis* Sclater) LAWRENCE, Ann. Lyc. N. Y., vii, 1862, 326 (Lion Hill, Panamá).

*Pithys bicolor* LAWRENCE, Ann. Lyc. Nat. Hist. N. Y., vii, 1862, 484 (Lion Hill Station, Panamá Railway; coll. G. N. Lawrence); viii, 1867, 6 (Lion Hill).—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1864, 357 (Lion Hill).—SALVIN, Proc. Zool. Soc. Lond., 1867, 145 (Santa Fé de Verágua, Panamá).—SCLATER, Cat. Birds Brit. Mus., xv, 1890, 296, part (Panamá, Chepo, and Santa Fe de Verágua, Panamá).

[*Pithys*] *bicolor* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 74, part (Panamá).

*Gymnopathys bicolor* SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 221 (Santa Fé de Verágua, Lion Hill Station, Paraiso Station, and Chepo, Panamá).

[*Gymnopathys*] *bicolor* SHARPE, Hand-list, iii, 1901, 30, part (Panamá).

## ANOPLOPS OLIVASCENS (Ridgway).

## OLIVE-SIDED ANTBIRD.

Similar to *A. bicolor*, but pileum and hindneck wholly chestnut-brown, like rest of upper parts.

*Adults (sexes alike).*—Above plain chestnut-brown (prouts brown to vandyke brown or even nearly burnt-umber), including entire pileum and hindneck; narrow line immediately above bare orbital region, suborbital region, auricular region, and malar region black; sides of neck and thence (broadly) to flanks plain brown (varying from olive-brown

<sup>a</sup> Three specimens.

<sup>b</sup> Two specimens.

<sup>c</sup> One specimen.



to vandyke brown), usually with more or less distinct spots or broad streaks of blackish or dusky along outer edge, some of the brown feathers sometimes margined with whitish; under tail-coverts brown, tipped or margined with whitish or buffy; chin, throat, chest, breast, and abdomen immaculate white; maxilla brownish black, paler (sometimes whitish) terminally and along tomia; mandible dull whitish or pale dull yellowish (in dried skins), usually dusky basally; legs and feet horn color (in dried skins).

*Adult male*.—Length (skins), 126–143 (135); wing, 71–78 (75.1); tail, 41.5–49.5 (45.9); culmen, 17–19 (18.2); tarsus, 25.5–27.5 (26.7); middle toe, 15.5–18.5 (17.4).<sup>a</sup>

*Adult female*.—Length (skins), 126–138.5 (132); wing, 70–75.5 (72.9); tail, 43–46.5 (44.4); culmen, 17–19 (17.3); tarsus, 25.5–27.5 (26.6); middle toe, 16–18.5 (17.6).<sup>b</sup>

*Immature male*.—Similar to adults but chest mostly light mummy brown, and white of breast, etc., more or less intermixed with the same.

Honduras (Santa Ana; Chaloma), Nicaragua (Chontales; Rio Escondido; San Emilis, Lake Nicaragua), Costa Rica (Angostura; Navarro de Cartago; La Balsa; Jiménez; San José; Pacuare; San Carlos; Boruca; El General; Pozo del Rio Grande; Pozo Real de Térraba; Pozo Azul de Pirris; Volcán de Turrialba; El Hogár; Guápiles; Cuábre; La Florida; La Cristina; La Vijagua) and western Panamá (Divala; Volcan de Chiriquí; Boquete).

*Pithys bicolor* (not of Lawrence, 1863) LAWRENCE, Ann. Lyc. N. Y., viii, 1868, 109 (Angostura, Costa Rica).—FRANTZIUS, Journ. für Orn., 1869, 306 (Costa Rica).—SALVIN, Proc. Zool. Soc. Lond., 1870, 195 (Volcan de Chiriquí and Bugaba, Panamá; crit.).—SCLATER, Ibis, 1873, 373 (Chontales, Nicaragua); Cat. Birds Brit. Mus., xv, 1890, 296, part (Bugaba and Volcan de Chiriquí, Panamá; La Balsa, Costa Rica; Chontales, Nicaragua).—BOUCARD, Proc. Zool. Soc. Lond., 1878, 62 (San Carlos, Costa Rica).—ZELEDÓN, Anal. Mus. Nac. Costa Rica, i, 1887, 115 (Navarro de Cartago, Costa Rica).—LANTZ, Trans. Kansas Acad. Sci. for 1896–97 (1899), 221 (Chaloma, Honduras).

<sup>a</sup> Nineteen specimens.

<sup>b</sup> Thirteen specimens.

| Locality.                                  | Wing. | Tail. | Culmen. | Tarsus. | Middle toe. |
|--------------------------------------------|-------|-------|---------|---------|-------------|
| MALES.                                     |       |       |         |         |             |
| Two adult males from Honduras.....         | 73.2  | 45.2  | 19      | 25.5    | 18          |
| One adult male from Nicaragua.....         | 74    | 44.5  | 18      | 27      | 18          |
| Ten adult males from Costa Rica.....       | 76    | 45.2  | 18.1    | 26.8    | 17.3        |
| Six adult males from western Panamá.....   | 74.2  | 47.5  | 18.4    | 26.6    | 17.2        |
| FEMALES.                                   |       |       |         |         |             |
| One adult female from Nicaragua.....       | 75.5  | 46    | 18.5    | 25.5    | 17          |
| Ten adult females from Costa Rica.....     | 72.4  | 44.2  | 17.6    | 26.6    | 17.5        |
| Two adult females from western Panamá..... | 73.7  | 44.5  | 18.5    | 26.7    | 18.2        |

[*Gymnopathys*] *bicolor* SHARPE, Hand-list, iii, 1901, 30, part (Nicaragua).

*Pithys bicolor olivascens* RIDGWAY, Proc. U. S. Nat. Mus., xiv, no. 868, Oct. 26, 1891, 469 (Santa Ana, Honduras; coll. U. S. Nat. Mus.).

*Gymnopathys olivascens* SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 222 (Santa Ana, Honduras; Chontales, Nicaragua; Angostura, La Balsa, Navarro de Cartago, and San Carlos, Costa Rica; Volcan de Chiriquí and Bugaba, Panamá).—RICHMOND, Proc. U. S. Nat. Mus., xvi, 1893, 501 (Rio Escondido, Nicaragua).—CHERRIE, Expl. Zool. Merid. Costa Rica, 1893, 42 (Boruca, Costa Rica; crit.).

[*Gymnopathys*] *olivascens* SHARPE, Hand-list, iii, 1901, 30 (Honduras).

*Gymnopathys bicolor olivascens* BANGS, Proc. New Engl. Zool. Club, iii, Jan. 30, 1902, 42 (Boquete, Panamá, 4,000–6,000 ft.).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 614 (Costa Rica; crit.; habits).

*Gymnopathys bicolor olivaceus* BANGS, Auk, xviii, Oct., 1891, 366 (Divala, Panamá); xxiv, 1907, 296 (Boruca and Pozo del Rio Grande, s. w. Costa Rica).

### Genus PHÆNOSTICTUS Ridgway.

*Phænostictus a* RIDGWAY, Proc. Biol. Soc. Wash., xxii, Apr. 17, 1909, 70. (Type, *Phlogopsis mcleanmani* Lawrence.)

Medium-sized or rather large Formicariidæ (length about 190 mm.) with bill stout and about as long as head, tail nearly as long as wing, tarsal scutella fused, sides of head naked, and with back and under parts conspicuously spotted with black.

Bill about as long as head, rather stout, moderately compressed terminally, its width at latero-frontal antiæ decidedly less than its depth at same point; culmen distinctly (almost sharply) ridged, nearly straight for most of its length or very slightly convex sub-basally, decurved terminally, the tip of maxilla moderately uncinatè; maxillary tomium nearly straight, slightly notched subterminally; mandibular tomium straight, minutely notched subterminally; gonys decidedly convex and prominent basally, faintly convex and ascending terminally. Nostril exposed, posteriorly in contact with thin feathering of latero-frontal antiæ, broadly oval, margined above by a rather broad extension of the membranous integument of the nasal fossæ, an internal tubercle showing distinctly within posterior portion. Rictal bristles absent, but feathers of loreal region with stiffened, bristle-like shafts. Wing moderate or rather large, with longest primaries extending considerably beyond secondaries; sixth, or fifth, sixth and seventh, primaries longest, the tenth (outermost) nearly two-thirds as long as the longest, the ninth about as long as secondaries. Tail of 12 rectrices, nearly as long as wing, graduated (graduation equal to length of tarsus or for about two-fifths its length), the rectrices rather narrow, rounded terminally. Tarsus a little more than one-third as long as wing, stout, booted (nonscutellate); middle toe, with claw, decidedly shorter than tarsus; outer toe, without claw, reaching to about middle of subterminal phalanx of middle

toe, the inner toe slightly but decidedly shorter; hallux as long as inner toe, much stouter; basal phalanx and half of second phalanx of middle toe united to outer toe, the former united for a little more than half its length to inner toe; claws moderate in size and curvature, that of the hallux much shorter than the digit. Plumage full, the scapulars, interscapulars, and feathers of under parts broad, distinctly outlined, and compactly webbed, those of rump and flanks more elongated and lax; feathers of pileum short; loreal, sub-orbital, and postocular regions naked, the ear quite exposed; a tuft or spot of short velvety feathers on upper eyelid.

*Coloration*.—Pileum grayish brown; throat and chest black; back, scapulars, and wing-coverts olive-brown or tawny-brown with large roundish black spots, the under parts with similar but smaller spots on a more rufescent ground; tail black.

*Range*.—Nicaragua to Panamá. (Monotypic.<sup>a</sup>)

**PHÆNOSTICTUS MCLEANNANI MCLEANNANI (Lawrence).**

**MC'LEANNAN'S ANTHRUSH.**

*Adults (sexes alike)*.—Pileum plain grayish brown (sepia to dark broccoli brown); hindneck chestnut or rufous-chestnut; general color of upper parts light olive-brown (between raw-umber and broccoli brown), each feather of back, scapulars, wing-coverts, and tertials very conspicuously marked with a large roundish or transverse broadly elliptical subterminal spot of black, and broadly margined terminally with pale brownish buff or clay color; tail black or brownish black; loreal, orbital, and auricular regions unfeathered, except for scattered bristly feathers on the first and a small patch of black feathers immediately above and another beneath eye, the naked skin azure blue in life; malar region, chin, throat, and upper chest uniform black; lower chest deep cinnamon-rufous, the lower chest similar but slightly paler or duller, each feather with a large roundish, subcordate, or broadly elliptical transverse spot of black;

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<sup>a</sup> The genus *Phlegopsis* Reichenbach (type *Myothera nigromaculata* Lafresnaye and D'Orbigny), to which the type of *Phænostictus* has hitherto been referred, differs conspicuously in shorter and slightly rounded tail (only two-thirds as long as wing, graduated for less than one-seventh its length) of, apparently, only 10 rectrices; very dense, plush-like, feathering of forehead and anterior half of loreal region; wholly (and densely) feathered malar region; covered ears; weaker bill, with less sharply ridged culmen and less elevated as well as broadly rounded mesorhinium, and wide, smooth, naked space between nostril and loreal feathering. The coloration, too, while somewhat similar is really very different, the head, neck, and under parts being uniform black, the remiges and tail chestnut, the feet black instead of yellow, and the naked skin on sides of head yellow instead of blue (in life).

I have not seen *Formicarius trivittatus* Sclater nor *F. erythropterus* Gould, both of which are referred by recent authors to *Phlegopsis*, but, according to descriptions, these are so different in their style of coloration that the matter of their structural characters should be carefully looked into.



breast and abdomen similarly spotted with black, but ground color less rufescent, the feathers broadly margined terminally with buff or brownish buff; flanks and lower abdomen plain olive-brown; under tail-coverts olive-brown, with a large subterminal spot of blackish and terminally margined with buffy brown or brownish buff; bill black, horn color or brownish at tip; iris brown; legs and feet yellowish (in dried skins—probably pinkish in life).

*Young*.—Pileum black, broadly barred with light gray; otherwise essentially like adults, but markings of back, etc., much less regular in form and less sharply contrasted, the feathers broadly tipped or terminally margined with tawny-buff, the under parts much darker, without any jugular area of cinnamon-rufous, the chest being black spotted with brownish tawny or cinnamon.

*Adult male*.—Length (skins), 174–200 (191); wing, 86–97 (92); tail, 80–92.5 (86.3); culmen, 21.5–22.5 (22.1); tarsus, 32–33.5 (32.7); middle toe, 19–21.5 (20.6).<sup>a</sup>

*Adult female*.—Length (skins), 184–203 (194); wing, 88–91 (89); tail, 82.5–88 (84.8); culmen, 22–23 (22.7); tarsus, 31–32.5 (31.8); middle toe, 20–21.5 (20.7).<sup>b</sup>

Eastern Panamá (Lion Hill; Panamá; Cascajal, Coclé; Santiago de Veragua?).<sup>c</sup>

*Phlogopsis mcleannani* LAWRENCE, Ann. Lyc. Nat. Hist. N. Y., vii, 1862 (pub. May, 1860), 285, 294 (Lion Hill Station, Panamá Railway; coll. U. S. Nat. Mus.).

*Phlogopsis mcleannani* SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1864, 357 (Lion Hill); Exotic Orn., pt. ii, pl. 9 (vol. ii, 1867, 17, pl. 15).—SALVIN, Proc. Zool. Soc. Lond., 1867, 145 (Santiago de Veragua).—SCLATER, Cat. Birds Brit. Mus., xv, 1890, 300, part (Panamá; Santiago de Veragua).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 236, part (Lion Hill, Panamá; Santiago de Veragua).—BANGS, Proc. New Engl. Zool. Club, ii, 1900, 24 (Loma del Leon, Panamá).

[*Phlogopsis*] *mcleannani* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 75.—SHARPE, Hand-list, iii, 1901, 37, part (Panamá).

(?) *Phlogopsis mcleannani* HARTERT, Novit. Zool., ix, 1902, 613 (Bulún, Rio Bogotá, n. w. Ecuador; crit.).

### PHENOSTICTUS MCLEANNANI SATURATUS (Richmond).

#### RICHMOND'S ANTHRUSH.

Similar to *P. m. mcleannani*, but coloration decidedly brighter, the general color of upper parts more tawny brown, with margins to feathers of back, etc., tawny or light tawny-brown instead of buffy,

<sup>a</sup> Five specimens.

<sup>b</sup> Three specimens.

<sup>c</sup> I have not seen specimens from Veragua. They may be referable to *P. m. saturatus*.

the under parts also much more tawny brown, with cinnamon-rufous of chest brighter.<sup>a</sup>

*Adult male*.—Length (skins), 183–202 (191); wing, 91.5–96 (93.4); tail, 81–88.5 (84.6); culmen, 21–23 (22.1); tarsus, 30.5–34 (32.9); middle toe, 20–21.5 (20.7).<sup>b</sup>

*Adult female*.—Length (skins), 177–194 (184); wing, 86–90.5 (88.7); tail, 76.5–83 (79.1); culmen, 20.5–23 (21.8); tarsus, 29–33 (31.5); middle toe, 18.5–21 (20.2).<sup>b</sup>

Costa Rica (Tucurríqui; Angostura; Rio Súcio; Rio Reventazón; El Hogár; Guápiles; La Cristina; San Carlos; Cariblanco de Sarapiquí; Cerro Santa Maria; Tenório; La Vijágua; Volcan de Miravalles) and Nicaragua (Chontales; Rio Escondido).

*Phlogopsis macleannani* (not of Lawrence, 1862) LAWRENCE, Ann. Lyc. N. Y., ix, 1868, 109 (Angostura, Costa Rica).—SALVIN, Proc. Zool. Soc. Lond., 1872, 313, 318 (Chontales, Nicaragua).—RIDGWAY, Proc. U. S. Nat. Mus., vi, 1883, 415 (Rio Súcio, Costa Rica).—ZELEDÓN, Anal. Mus. Nac. Costa Rica, 1887, 115 (Rio Súcio).—SCLATER, Cat. Birds Brit. Mus., xv, 1890, 300, part (Chontales, Nicaragua; Tucurríqui, Costa Rica).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 236, part (Chontales, Nicaragua; Tucurríqui, Angostura, and Rio Súcio, Costa Rica).—RICHMOND, Proc. U. S. Nat. Mus., xvi, 1893, 502 (Rio Escondido, Nicaragua; habits, etc.).—UNDERWOOD, Ibis, 1896, 441 (Volcan de Miravalles, Costa Rica).

[*Phlogopsis*] *macleannani* SHARPE, Hand-list, iii, 1901, 37, part (Nicaragua).

*Phlegopsis macleannani* FRANTZIUS, Journ. für Orn., 1869, 306 (Costa Rica).

*Phlegopsis saturata* RICHMOND, Proc. U. S. Nat. Mus., xviii, Aug. 12, 1896, 625 (Rio Escondido, 50 m. from Bluefields, Nicaragua; coll. U. S. Nat. Mus.).

[*Phlogopsis*] *saturata* SHARPE, Hand-list, iii, 1901, 37 (Nicaragua).

*Phænostictus macleannani saturatus* CARRIKER, Ann. Carnegie Mus., vi, 1910, 622 (Caribbean lowlands and foothills of Costa Rica, 600–1,500 ft.; crit.; habits).

<sup>a</sup> “Naked skin on head azure blue, around ears and along lower jaw campanula blue; bill black; tarsi, feet, and claws pinkish vinaceous.” (C. W. Richmond.)

<sup>b</sup> Eleven specimens.

| Locality.                                                         | Wing. | Tail. | Culmen. | Tarsus. | Middle toe. |
|-------------------------------------------------------------------|-------|-------|---------|---------|-------------|
| MALES.                                                            |       |       |         |         |             |
| One adult male from Nicaragua.....                                | 95.5  | 88.5  | 21      | 32.5    | 20          |
| Ten adult males from Costa Rica.....                              | 93.1  | 84.2  | 22.1    | 32.9    | 20.7        |
| Five adult males ( <i>P. m. macleannani</i> ) from Panamá.....    | 92    | 86.3  | 22.1    | 32.7    | 20.6        |
| FEMALES.                                                          |       |       |         |         |             |
| One adult female from Nicaragua.....                              | 87.5  | 76.5  | 22      | 32      | 21          |
| Ten adult females from Costa Rica.....                            | 88.8  | 79.3  | 21.6    | 31.3    | 20.1        |
| Three adult females ( <i>P. m. macleannani</i> ) from Panamá..... | 89    | 84.8  | 22.7    | 31.8    | 20.7        |

## Genus RHOPOTERPE Cabanis.

(?) *Myrmornis* HERMANN, Tab. aff. Anim., 1783, 188, 235. (Type, *Fourmillier* Buffon.)<sup>a</sup>

*Formicivorus* TEMMINCK, Cat. Syst. Cab. Orn., 1807, 92. (Type, by tautonomy, *Formicivorus palikour* Temminck = *Turdus formicivorus* Gmelin = *Formicarius torquatus* Boddaert.)

(?) *Urotomus* SWAINSON, Zool. Journ., i, no. 3, Oct., 1824, 302, in text (nomen nudum); iii, no. 10, Sept., 1827, 166 (diagnosis, but no species named).

*Rhopoterpe* CABANIS, in Wiegmann's Archiv für Naturg., xiii, pt. i, 1847, 227, 337. (Type, *Turdus formicivorus* Gmelin = *Formicarius torquatus* Boddaert.)

Medium-sized Formicariidæ (length about 130–150 mm.) with planta tarsi broadly rounded (not ridged) behind; tarsus only one-fourth as long as wing; tail only two-fifths as long as wing, nearly even; bill as long as or longer than head (commissure longer than tarsus), with mesorhinium broad and flattened basally; coloration variegated, with a white or fulvous band across subbasal portion of remiges, and outer web of primaries crossed by an oblique subterminal band of buff or fulvous.

Bill as long as or longer than head, rather slender, rather broad and depressed basally, its width at loral antiæ greater than its depth at same point and equal to less than half the distance from nostril to tip of maxilla; culmen distinctly ridged (except extreme base, where broad and flattened), straight for most of its length, abruptly decurved terminally, the tip of maxilla moderately uncinately; tomia straight, slightly but distinctly notched subterminally; gonys slightly convex, rather prominent basally. Nostril exposed, separated rather widely from loral feathering, narrow, longitudinal (slit-like) overhung by a rather broad convex operculum. Rictal bristles obsolete, and feathers of chin, malar apex, loral antiæ, etc., short, without terminal setæ. Wing large, very concave beneath, rather pointed, the longest primaries projecting considerably beyond secondaries; sixth and seventh, or sixth, seventh, and eighth primaries longest, the tenth (outermost) three-fourths as long as the longest, the ninth longer than secondaries. Tail very short (only two-fifths as long as wing), nearly even, the rectrices rather narrow, soft, with subacuminate tip. Tarsus shorter than commissure, only one-fourth as long as wing, rather stout, distinctly scutellate, the planta rather broadly rounded

<sup>a</sup> The "Fourmillier" of Buffon comprises thirteen species, belonging to eleven recognized genera and four families (Formicariidæ, Conopophagidæ, Pittidæ, and Troglodytidæ). So far as I can determine no one has ever fixed a type, and to do so by any other method than the "process of elimination" would involve an amount of time and labor which is not at my disposal. Under the circumstances, I prefer to retain the generic name *Rhopoterpe*, notwithstanding the unquestioned priority and pertinence of *Formicivorus*, leaving the final solution of the question to some one who has both the time and taste for such investigation.

<sup>b</sup> "ῥωψ Gesträuch; τέρπω, erquicken." (Cabanis.)



(not ridged) posteriorly, the plantar scutella forming a single series which bends around from the outer to the inner side, where separated from the inner edge of the acrotarsium by a distinct groove; middle toe, with claw, longer than tarsus; outer toe, without claw, not reaching to middle of subterminal phalanx of middle toe, the inner toe very slightly shorter; hallux as long as outer toe, but much stouter; basal phalanx of middle toe wholly united to outer toe, for about half its length to inner toe; claws moderate in size and curvature, that of the hallux shorter than the digit. Plumage rather thin, but feathers mostly broad and distinctly outlined, those of rump and flanks more elongated and lax; feathering of head very short (scale-like on superciliary region and sides of neck), the rictal and postocular regions naked.

*Coloration*.—Above brownish, with a concealed white dorsal patch; wings black with two buffy or fulvous bands (tips of middle and greater coverts) and an oblique band of same across subterminal portion of primaries; a broad white band across inner webs of remiges near base; under parts of body gray, the throat and upper chest black in male, rufous-tawny in female.

*Range*.—Nicaragua to Cayenne and Ecuadór. (Two species.<sup>a</sup>)

#### KEY TO THE SPECIES OF RHOPOTERPE.

- a*. Inner webs of remiges crossed by a band of white; remiges without buff or tawny terminal spots; upper tail-coverts and tail cinnamon-rufous. (Cayenne and British Guiana to eastern Ecuadór.).....*Rhopoterpe torquata* (extralimital).<sup>b</sup>  
*aa*. Inner webs of remiges crossed by a band of buff or tawny; remiges tipped with a buff or tawny spot; upper tail-coverts and tail brown. (Eastern Nicaragua.)

*Rhopoterpe stictoptera* (p. 139).

#### RHOPOTERPE STICTOPTERA Salvin.

##### RICHARDSON'S ANTHRUSH.

Allied to *R. torquata* and of the same size and for the most part similar in coloration; but top of head darker, rump and tail more fuscous, outer web of remiges with a distinct terminal spot of fawn

<sup>a</sup>The above description is based entirely on the type of the genus, *R. torquata* (Gmelin). *R. stictoptera* Salvin, of Nicaragua, which I have not seen, is apparently very similar in coloration, but has the band across inner webs of remiges fulvous instead of white.

<sup>b</sup>*Formicarius torquatus* Boddaert, Tabl. Pl. Enl., 1783, 43 (Cayenne; based on *Le Fourmillier de Cayenne* Daubenton, Pl. Enl., pl. 700, fig. 1).—*Rhopoterpe torquata* Sclater, Proc. Zool. Soc. Lond., 1858, 275; Cat. Birds Brit. Mus., xv, 1890, 298.—[*Turdus*] *formicivorus* Gmelin, Syst. Nat., i, pt. 2, 1788, 828 (based on *Fourmillier de Cayenne* Daubenton, Pl. Enl., pl. 700, fig. 1).—*Myrmothera formicivora* Vieillot, Nouv. Dict. d'Hist. Nat., xii, 1817, 114, pl. D. 26.—*Rhopoterpe formicivora* Cabanis, Wiegmann's Archiv für Naturg., 1847, pt. i, 228.—*Formicivorus palikour* Temminck, Cat. Syst. Cabinet d'Orn., 1807, 93 (new name for *Turdus formicivorus* Gmelin).—*Myiorturdus palikour* Ménétriés, Mém. Acad. St. Petersburg, sér. vi (Sci. Nat.), 1 (Livr. 5), 1835, 470.

color, the inner webs with a spot of fawn color (not white), and greater wing-coverts tipped with clear fawn color.<sup>a</sup>

Nicaragua (Santo Domingo, Chontales).

*Rhopoterpe stictoptera* SALVIN, Bull. Brit. Orn. Club, no. vi, March 1, 1893, p. xxxii; Ibis, 6th ser. v, no. 18, April, 1893, 264 (Santo Domingo, Chontales, Nicaragua; coll. Salvin and Godman).

[*Rhopoterpe*] *stictoptera* SHARPE, Hand-list, iii, 1901, 31.

#### Genus PITTASOMA Cassin.

*Pittasoma* CASSIN, Proc. Ac. Nat. Sci. Phila., 1860, 189. (Type, *P. michleri* Cassin.)

*Pittisoma* (emendation) SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1864, 357.

*Calobamon* <sup>b</sup> HEINE, in Heine and Reichenow, Nomencl. Mus. Hein. Orn., 1890, 123. (New name for *Pittasoma* Cassin, on grounds of purism.)

Very large Formicariidæ (length about 160–180 mm.) with excessively short tail (shorter than commissure, only one-third as long as the short, much-rounded wing), stout, distinctly uncinatè, bill, very long tarsi (half as long as wing), and conspicuously variegated coloration.

Bill nearly as long as head, stout, rather broad and slightly depressed basally, its width at loreal antiæ much greater than its height at same point and equal to half the distance from nostril to tip of maxilla, or slightly more; culmen distinctly but not sharply ridged, slightly curved from near base to near tip, where more strongly decurved, the tip of maxilla strongly uncinatè; maxillary tomium straight or very faintly concave, distinctly notched subterminally; mandibular tomium faintly convex, slightly but distinctly notched subterminally; gonys strongly convex and prominent basally, nearly straight for most of its length, ascending terminally, the tip of the mandible forming an obtuse, slightly recurved, point. Nostril exposed, posteriorly in contact with loreal feathering, longitudinally oval, with a thin, pointed, internal tubercle or splint in upper posterior portion. Rictal bristles present but short and inconspicuous. Wing rather short, much rounded, the longest primaries scarcely if at all extending beyond secondaries; fifth and sixth, or fourth, fifth, and sixth, primaries longest, the tenth (outermost) less than two-thirds as long as the longest, the ninth much shorter than secondaries. Tail excessively short, shorter than commissure, only one-third as long as wing, the rectrices relatively broad. Tarsus much longer than commissure, half as long as wing, stout, rounded posteriorly, distinctly scutellate, the plantar scutella indistinct (fused on upper half or more); middle toe, with claw, about three-fourths as long as tarsus; outer toe, without claw, reaching to a little beyond subterminal articulation of mid-

<sup>a</sup> Free translation of the original Latin diagnosis.

<sup>b</sup> *Καλός*, beautiful; *βῆμα* (*βῆμα*), a step, pace.

dle toe, the inner toe reaching about to the joint; hallux about as long as inner toe, but much stouter; basal phalanx of middle toe united to outer toe for greater part of its length, to inner toe for less than half its length; claws moderate in size and curvature, that of the hallux shorter than the digit. Plumage full, with feathers broad and distinctly outlined, those of rump and flanks more elongated, blended, and lax; feathers of pileum rather stiff, slightly elongated; an elongated, narrow, naked postocular space.

*Coloration*.—Head black, with more or less of chestnut on lateral portion, the throat sometimes spotted with brown and whitish; above brown, the back streaked with black, wing-coverts with subapical spots of buff or light fulvous margined with black; under parts broadly barred or squamated with white and black.

*Range*.—Eastern Costa Rica to northwestern Ecuador. (Two species.)

#### KEY TO THE SPECIES AND SUBSPECIES OF PITTASOMA.

- a. Pileum, including superciliary and supra-auricular regions, uniform black.
  - b. Smaller (wing 93–99.5 in adult male, 93.5–95.5 in adult female); auricular and suborbital regions wholly chestnut. (Panamá.)  
*Pittasoma michleri michleri* (p. 141).
  - bb. Larger (wing 99.5–115 in adult male, 97.5–100.5 in adult female); auriculars and suborbital regions black, or mostly so. (Costa Rica.)  
*Pittasoma michleri zeledoni* (p. 142).
- aa. Pileum rufous, bordered laterally by a black superciliary stripe. (Northwestern Ecuador.)  
*Pittasoma rufopileatum* (extralimital).<sup>a</sup>

#### PITTASOMA MICHLERI MICHLERI Cassin.

##### MICHLER'S ANTPITTA.

*Adult male*.—Pileum, including upper half of lores and whole of superciliary region, uniform black (slightly glossy); back, scapulars, rump, and upper tail-coverts olive-brown to vandyke brown, the first broadly but not sharply streaked with black (the feathers sometimes also narrowly squamately margined with the same), and with narrow buffy shaft-streaks; tail deep chestnut-brown; wings deep chestnut-brown, the middle and greater coverts with a small subterminal transverse spot of whitish or buffy, inclosed between a small black spot and a narrow terminal bar;<sup>b</sup> tertials with a more or less distinct apical spot of buff or tawny; outer webs of primaries lighter chestnut-brown than the general color; lower half of lores dull white, usually somewhat flecked with dusky; auricular and malar regions uniform deep chestnut, the latter, however, partly mixed with black, especially

<sup>a</sup> *Pittasoma rufopileatum* Hartert, Novit. Zool., viii, no. 3, Oct. 5, 1901, 370 (Salidero, Bulón, n. w. Ecuador; coll. Tring Mus.); ix, 1902, 615, pl. 8.

This species I have not seen.

<sup>b</sup> Sometimes a few of the lesser coverts have similar but smaller markings.



the posterior portion; sides of neck mummy brown; chin and throat black (chin sometimes mostly white), broken, more or less, by narrow shaft-streaks or small spots of white or chestnut, the feathers of lower throat sometimes tipped with chestnut; rest of under parts mostly white, heavily marked with broad U-shaped bars of black, the flanks light mummy or chestnut-brown, indistinctly barred with dusky, the under tail-coverts brownish white or pale tawny barred or lunulated with black; maxilla brownish black or blackish brown, paler on tomium; mandible pale yellowish (in dried skins); legs and feet pale yellowish horn color (in dried skins); length (skins), 160–175 (167); wing, 93–99.5 (97.1); tail, 33–37.5 (35.5); culmen, 26.5–27.5 (27); tarsus, 47–52 (49.7); middle toe, 26–29.5 (27.6).<sup>a</sup>

*Adult female*.—Above similar to the adult male; chin and throat mixed white and light chestnut irregularly spotted or barred with black; remaining under parts as in adult male, but black U-shaped markings narrower, and the white general color more or less suffused or tinged with buff, the chest sometimes washed with rusty; length (skins), 155–178 (164); wing, 93.5–95.5 (94.4); tail, 32–35 (33.1); culmen, 26; tarsus, 46.5–49 (48.1); middle toe, 27–29 (28).<sup>b</sup>

*Immature female*.—Similar to the adult female, but lower throat tawny, chin and upper throat white, with a few narrow streaks of black.

Panamá (Lion Hill; Panamá; Laguna del Pita; Santa Fé and Calovévora, Verágua? <sup>c</sup>) and adjacent portion of northwestern Colombia (Rio Truando).

*Pittasoma michleri* CASSIN, Proc. Ac. Nat. Sci. Phila., 1860, 189 (Rio Truando, Colombia; coll. U. S. Nat. Mus.); 1864, 257, pl. 3.—LAWRENCE, Ann. Lyc. N. Y., vii, 1862, 326 (Lion Hill, Panamá).—SALVIN, Proc. Zool. Soc. Lond., 1867, 146 (Santa Fé de Verágua, Panamá); 1870, 196 (Calovévora, Panama).—SCLATER, Cat. Birds Brit. Mus., xv, 1890, 309.—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 237.—SALVADORI and FESTA, Boll. Mus. Zool., etc., Torino, xiv, 1899, no. 339, 7 (Laguna del Pita, Panamá). [*Pittasoma*] *michleri* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 75.—SHARPE, Hand-list, iii, 1901, 40.

*Pittisoma michleri* SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1864, 357 (Panamá; crit.).

#### PITTASOMA MICHLERI ZELEDONI Ridgway.

##### ZELEDÓN'S ANTPITTA.

Similar to *P. m. michleri* but decidedly larger; adult male with head entirely black, except for a tinge of chestnut on auricular region.

<sup>a</sup> Seven specimens.

<sup>b</sup> Four specimens.

<sup>c</sup> I have not seen specimens from Verágua. They may be referable to *P. m. zeledoni*.

*Adult male*.—Length (skins), 175–179 (177); wing, 99.5–115 (105.1); tail, 31.5–34 (33); culmen, 29–31 (30); tarsus, 50–51.5 (50.7); middle toe, 28.5–31 (30.2).<sup>a</sup>

*Adult female*.—Length (skins), 166–181 (172); wing, 97.5–100.5 (98.7); tail, 33.5–36 (34.3); culmen, 27–30 (28.5); tarsus, 46–52 (48); middle toe, 29–31 (30).<sup>a</sup>

Eastern Costa Rica (Rio Súcio; Rio Sicsola; Jiménez; Carrillo).

*Pittasoma michleri zeledoni* RIDGWAY, Proc. U. S. Nat. Mus., vi, Apr. 11, 1884, 414 (Rio Súcio, Costa Rica; coll. U. S. Nat. Mus.).—ZELEDÓN, Anal. Mus., Costa Rica, i, 1887, 115 (Jiménez, Costa Rica).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 626 (Caribbean foothills of Costa Rica, to about 2,500 ft.; habits).

*Pittasoma zeledoni* SCLATER, Cat. Birds Brit. Mus., xv, 1890, 310.—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 238.

[*Pittasoma*] *zeledoni* SHARPE, Hand-list, iii, 1901, 40.

### Genus GRALLARICULA Sclater.

*Grallaricula* SCLATER, Proc. Zool. Soc. Lond., 1858, 283. (Type, *Grallaria flavirostris* Sclater.)

Small Formicariidæ (length about 90–115 mm.) with very short, emarginate tail (only about one-third as long as wing), short and broad but rather thick bill, long and conspicuous rictal bristles, rather long, slender tarsi (about one-third as long as wing), the color plain brown or olive above, whitish or tawny below, usually more or less streaked or squamated with black or dusky—sometimes plain gray, with head and neck chestnut.

Bill much shorter than head, rather stout, broadly wedge-shaped in vertical profile, its width at loreal antiaë decidedly greater than its depth at same point and equal to about three-fifths the distance from nostril to tip of maxilla; culmen distinctly ridged, gradually and rather strongly decurved from near base, the tip of maxilla distinctly but rather minutely uncinatè; maxillary tomium slightly concave, distinctly but minutely notched subterminally; mandibular tomium faintly convex (at least distally), faintly notched subterminally; gonys faintly or gently convex, not prominent basally. Nostril partly exposed, partly hidden by antrorse feathering of loreal antiaë, small, longitudinal, narrowly oval or elliptical, overhung by a rather broad extension of the membranous integument of the nasal fossæ. Rictal bristles conspicuously developed, nearly (sometimes quite) as long as bill, the feathers of chin, malar antiaë, and loreal region with distinct terminal setæ. Wing rather long, with longest primaries much longer than secondaries; sixth and seventh primaries longest, the tenth (outermost) two-thirds as long as longest, or slightly more, the ninth decidedly longer than secondaries. Tail about one-third as long as

<sup>a</sup> Three specimens.

wing, even, slightly double rounded, or slightly emarginate, the rectrices (10?) very narrow, rounded or minutely subacuminate terminally. Tarsus much longer than commissure, about one-third as long as wing, slender, distinctly scutellate, the plantar scutella in a single longitudinal series, bending around to the inner side, where separated from the inner edge of the acrotarsium by a rather broad shallow groove; middle toe, with claw, much shorter than tarsus, decidedly shorter than commissure; outer toe, without claw, reaching very nearly to middle of subterminal phalanx of middle toe, the inner toe very slightly shorter; hallux about as long as inner toe but much stouter; basal phalanx of middle toe united for more than half its length to outer toe, for about half its length to inner toe; claws moderate in size and curvature, that of the hallux shorter than the digit, acute, much compressed. Plumage full, soft, and (mostly) blended, that of rump and flanks more elongated and fluffy or lax; feathers of pileum slightly elongated, distinctly outlined.

*Coloration*.—(I) Above plain brown or olive; beneath white, or white and ochraceous, tawny, or rufescent, usually more or less streaked or squamated with black or dusky. (II) Head (all round) chestnut; rest of plumage plain brownish gray above, lighter and clearer gray beneath, with patch of white on lower abdomen and foreneck.

*Range*.—Costa Rica to mountains of British Guiana and Ecuador. (Six species.<sup>a</sup>)

#### KEY TO THE SPECIES OF GRALLARICULA.

- a. Under parts without streaks or other markings (tawny or tawny-ochraceous, the throat and abdomen sometimes white or whitish). (Santa Marta district of Colombia to Venezuela.).....*Grallaricula ferrugineipectus* (extralimital).<sup>b</sup>
- aa. Under parts more or less streaked or spotted with blackish or dusky.
  - b. Paler olive-brown above; under parts with less of ochraceous and with black streaks or squamations much heavier. (Colombia to eastern Ecuador.)  
*Grallaricula flavirostris* (extralimital).<sup>c</sup>
  - bb. Darker olive-brown above; under parts with more ochraceous or ochraceous-tawny (mostly so) with blackish streaks or squamations indistinct. (Costa Rica and western Panamá.).....*Grallaricula costaricensis* (p. 145).

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<sup>a</sup> Of these I have seen only *G. flavirostris* (Sclater), *G. ferrugineipectus* (Sclater), and *G. costaricensis* Lawrence.

<sup>b</sup> *Grallaria ferrugineipectus* Sclater, Proc. Zool. Soc. Lond., 1857 (pub. Oct. 21), 129 (near Carácas, Venezuela; coll. Paris Mus.); Ann. and Mag. N. H. (2), xx, 1857, 462 (reprint).—*Grallaricula ferrugineipectus* Sclater, Proc. Zool. Soc. Lond., 1858, 284 (monogr.); Cat. Birds Brit. Mus., xv, 1890, 326.—*Conopophaga browni* Bangs, Proc. Biol. Soc. Wash., xiii, Nov. 11, 1899, 100 (Chirua, Santa Marta, Colombia, 7,000 ft.; coll. E. A. and O. Bangs).

<sup>c</sup> *Grallaria flavirostris* Sclater, Proc. Zool. Soc. Lond., 1858 (pub. Apr. 26), 68 (Rio Napo, e. Ecuador; coll. Verreaux).—*Grallaricula flavirostris* Sclater, Proc. Zool. Soc. Lond., 1858, 283 (monogr.); Cat. Birds Brit. Mus., xv, 1890, 326.



## GRALLARICULA COSTARICENSIS Lawrence.

## COSTA RICAN GRALLARICULA.

*Adults (scres alike).*—Pileum and hindneck plain grayish olive, more brownish on forehead; rest of upper parts plain brownish olive, the general color of wings, together with tail, decidedly browner (sometimes nearly prouts brown); outer web of exterior feather of alula buff or ochraceous-buff; wing-coverts sometimes with an indistinct terminal spot or terminal margin of light tawny or rufescent brown; an indistinct orbital ring of tawny; lores buffy or ochraceous, suffused with black or dusky in middle portion; suborbital and auricular regions olive tinged with tawny, the latter with very indistinct narrow shaft-streaks of paler; malar region, chin, throat, chest, and sides ochraceous or tawny-ochraceous, usually somewhat paler on chin and throat, the chest usually more or less distinctly marked (irregularly) with black or dusky; abdomen and median lower part of breast white or buffy white, the latter, as well as sides of abdomen, usually flecked with black or dusky; under tail-coverts pale buff or buffy whitish; under wing-coverts clear ochraceous, those over carpo-metacarpal joint, more or less extensively, dusky; inner webs of remiges rather indistinctly edged with brownish buff or pale wood brown; maxilla horn brown (more or less dark), mandible pale dull yellowish (wax yellow in life);<sup>a</sup> iris brown<sup>b</sup> or red;<sup>a</sup> legs and feet pale yellowish brown (yellowish olive in life).<sup>a</sup>

*Adult male.*—Length (skin), 97; wing, 66; tail, 26; culmen, 13.5; tarsus, 21.5; middle toe, 13.5.

*Adult female.*—Length (skins), 86.5–100.5 (92); wing, 61.5–64 (62.8); tail, 18–24.5 (21.7); culmen, 13.5–14.5 (14); tarsus, 20.5–21 (20.7); middle toe, 13.5–14 (13.7).<sup>c</sup>

Costa Rica (Navarro; Barranca; Buena Vista; Rio Súcio; Cariblanco de Sarapiquí; base of Volcán de Turrialba, 2,000 ft.) and western Panamá (Chitra; Calovévora; Calobre; Cordillera de Tolé; Caribbean slope, Chiriquí).

*Grallaricula costaricensis* LAWRENCE, Ann. Lyc. Nat. Hist. N. Y., viii, 1867, 346 (Barranca, Costa Rica; coll. U. S. Nat. Mus.); ix, 1868, 110 (Barranca).—

SALVIN, Proc. Zool. Soc. Lond., 1867, 146 (Cordillera de Tolé, Panamá);

<sup>a</sup> J. C. Zeledón, on label.

<sup>b</sup> F. Carmiol, on label.

<sup>c</sup> Three specimens.

| Locality.                                            | Wing. | Tail. | Culmen. | Tarsus. | Middle toe. |
|------------------------------------------------------|-------|-------|---------|---------|-------------|
| Two adult females from Costa Rica.....               | 62.3  | 20.3  | 14      | 20.7    | 13.7        |
| One adult female from western Panamá (Chiriquí)..... | 64    | 24.5  | 14      | .....   | .....       |

- 1870, 196 (Chitra and Calovévora, Panama).—FRANTZIUS, Journ. für Orn., 1869, 306 (Costa Rica).—RIDGWAY, Proc. U. S. Nat. Mus., vi, 1883, 415 (Navarro, Costa Rica).
- Grallaricula flavirostris costaricensis* CARRIKER, Ann. Carnegie Mus., vi, 1910, 630 (Cariblanco de Sarapiquí and base of Volcán de Turrialba, 2,000 ft., Costa Rica).
- [*Grallaricula*] *flavirostris* (not *Grallaria flavirostris* Sclater, 1858) SCLATER and SALVIN, Nom. Av. Neotr., 1873, 76, part (Costa Rica; Veragua).—SHARPE, Hand-list, iii, 1901, 44, part (Costa Rica; Panamá).
- Grallaricula flavirostris* SCLATER, Cat. Birds Brit. Mus., xv, 1890, 326, part (Buena Vista, Costa Rica; Calovévora and Cordillera de Tolé, Panamá).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 245, part (Barranca, Buena Vista, and Río Súcio, Costa Rica; Chitra, Cordillera de Tolé, Calovévora, and Calobre, Panamá).
- (?) *Grallaricula vegeta* BANGS,<sup>a</sup> Proc. New Engl. Zool. Club, iii, Jan. 30, 1902, 42 (Caribbean slope of Volcán de Chiriquí, 4,000 ft., Panamá; coll. E. A. and O. Bangs).

### Genus GRALLARIA Vieillot.

- Grallaria* VIEILLOT, Analyse, 1816, 43. (Type, *Roi des Fourmilliers* Buffon=*Formicarius varius* Boddaert.)
- Myioturdus* BOIE, Isis, 1826, 972. (Type, *Formicarius varius* Boddaert.)
- Myiotrichas* BOIE, Isis, 1831, 542. (Type, *Formicarius varius* Boddaert.)
- Colobathris* <sup>b</sup> GLOGER, Hand- und Hilfsb. der Natürg., 1842, 304. (New name for "*Grallina*"=*Grallaria* Vieillot.)
- Chamæbates* <sup>c</sup> BERTONI, Aves Nuevas del Paraguay, 1901, 150. (Type, *C. rufiventris* Bertoni=*Myiothera gallaria* Lichtenstein.)

Very large terrestrial Formicariidæ (length about 160–210 mm.) with the slender tarsus less than half as long as wing, tail less than half (usually only two-fifths) as long as wing, and plumage of upper parts more or less distinctly squamated with dusky.

Bill shorter than head, stout, much deeper than broad at base, its width at loral antiæ decidedly less than its height at same point and equal to a little to considerably less than half the distance from nostril to tip of maxilla; culmen very indistinctly if at all ridged, gradually but rather strongly curved from base, the tip of maxilla distinctly but not abruptly uncinat; maxillary tomium very slightly concave, distinctly notched subterminally; mandibular tomium nearly straight or very faintly convex, with faint subterminal notch; gonys slightly to very faintly convex, very ascending terminally, not prominent basally. Nostril exposed, posteriorly in contact with loral feathering, obliquely broadly oval, with an internal tubercle or septum showing within upper posterior portion. Rictal bristles distinct but very slender;

<sup>a</sup> I am not satisfied as to the distinctness of *G. vegeta*. The individual variation among Costa Rican specimens (of which, however, I have seen but few) is considerable, and I strongly suspect that a larger series of specimens would show the birds from western Panamá to be inseparable.

<sup>b</sup> See also *Colobathris Cabis*, Wiegmann's Archiv, 1847, i, 216.

<sup>c</sup> *Xaquai*, on the ground; *βάρης*, one who treads or covers. (Bertoni.)

feathers of chin and upper throat with long, slender, terminal setæ. Wing moderate or rather large, with longest primaries projecting considerably beyond secondaries; sixth and seventh, or fifth, sixth, seventh, and eighth primaries longest, the tenth (outermost) about two-thirds to three-fourths as long as the longest, the ninth decidedly to much longer than secondaries. Tail two-fifths to nearly half as long as wing, even, or very slightly rounded, the rectrices (12) rounded terminally. Tarsus less than half as long as wing, slender, the planta fused (non-scutellate) or with scutella indistinct, its inner edge scarcely if at all convolute, the acrotarsium with 12-14 scutella; middle toe, with claw, about two-thirds as long as tarsus, longer than whole culmen; outer toe, without claw, reaching to a little beyond subterminal articulation of middle toe, the inner toe slightly shorter; hallux shorter than inner toe, not conspicuously stouter; basal phalanx of middle toe united for more than half its length to outer toe, for less than half to inner toe; claws short to moderately long, not strongly curved, moderately compressed, not grooved laterally, that of the hallux shorter than the digit. Plumage very full, that of rump and flanks (especially the former) elongated and more lax; a small naked postocular space (except in *G. squamigera*<sup>a</sup> and allies).

*Coloration*.—Above olive, the hindneck and part of pileum grayish, distinctly squamated with black (squamations indistinct in *G. squamigera*, which has the under parts conspicuously barred or lunulated with black); tail rufescent brown or russet (except in *G. squamigera*); under parts rufescent or tawny, sometimes more or less variegated, especially on throat, sometimes mixed olive and buffy with indistinct bars of darker.

*Range*.—Southern Mexico to Cayenne, southeastern Brazil, Bolivia, and Peru. (About ten species, including subspecies.)

#### KEY TO THE SUBSPECIES OF GRALLARIA GUATIMALENSIS.

- a. Coloration darker, the general color of under parts ochraceous to tawny; black squamations of upper parts much heavier; gray of hindneck and pileum much clearer (more bluish) much more extended, the forehead much less extensively (sometimes not at all) brownish; size averaging considerably smaller (maximum average measurements: wing 113.3, tail 41.8, culmen, 27.2, tarsus 49.6, middle toe 25.3).
- b. Darker; under parts tawny to chestnut-tawny; larger (averaging: wing 111.7 or more, tarsus 48.2 or more, middle toe 24.4 or more), except tail and bill.
- c. Slightly paler, with black squamations of upper parts narrower; averaging slightly larger, except bill and middle toe (wing averaging 113.3, tail 41.5, culmen 25.8, tarsus 49.6, middle toe 24.4). (Chiapas to northern Nicaragua.)

*Grallaria guatimalensis guatimalensis* (p. 148).

<sup>a</sup> *G. squamigera* also differs in having the planta tarsi partly scutellate, the tail nearly half instead of only two-fifths as long as wing, with firmer rectrices, relatively longer outermost primary, and other minor characters, and may not be congeneric.



- cc. Slightly darker, with black squamations of upper parts heavier; averaging slightly smaller, except bill and middle toe (wing averaging 111.7, tail 41, culmen 27.2, tarsus 48.2, middle toe 25.3). (Costa Rica and western Panamá.)..... *Grallaria guatimalensis princeps* (p. 149).
- bb. Paler; under parts ochraceous, deepening into brownish tawny on chest; smaller, except tail and bill (averaging: wing 109.5, tarsus 40.4, middle toe 20.8). (Southeastern Mexico.)..... *Grallaria guatimalensis mexicana* (p. 150).
- aa. Coloration paler, the general color of under parts dull buff to clay color; black squamations of upper parts much narrower; gray of hindneck, etc., much duller, much more restricted, the whole forehead (sometimes crown, also) light olive-brownish; size averaging larger (average measurements: wing 116.5, tail 48.3, culmen 27.3, tarsus 51.8, middle toe 26.5). (Southwestern Mexico.)  
*Grallaria guatimalensis ochraceiventris* (p. 151).

**GRALLARIA GUATIMALENSIS GUATIMALENSIS** Prévost and Des Murs.

**GUATEMALAN ANTPITTA.**

*Adults (sexes alike?).*<sup>a</sup>—Pileum and hindneck slate color or slate-gray, the feathers margined with black, producing a squamate effect; back, scapulars, and rump olive, the feathers rather broadly margined with black; upper tail-coverts and tail russet-brown to chestnut; wings olive or olive-brown, the remiges more russet brown, lighter on primaries, the outer of which have their outer webs much paler (nearly wood brown) terminally; greater coverts edged with russet, sometimes (also occasionally the middle coverts) with more or less distinct terminal spots of tawny; lores dull whitish, sometimes slightly intermixed with dusky or grayish; a narrow line of white on posterior half (more or less) of upper eyelid; the posterior portion of lower eyelid also whitish; suborbital and auricular regions dark olive with narrow but distinct shaft-streaks of whitish or pale tawny; malar region whitish, buffy or tawny; chin and upper throat olive-brown, suffused, more or less strongly, with tawny-ochraceous, sometimes mixed somewhat with dusky, the feathers with pale ochraceous or buffy shaft-streaks; lower throat tawny or tawny-ochraceous to ochraceous-white, usually immaculate but sometimes more or less broken by dusky spots or bars, usually bounded posteriorly by a more or less distinct narrow semicircular line of dusky or sooty blackish spots; rest of under parts plain bright tawny or tawny-ochraceous, slightly paler on abdomen, deeper on sides and flanks; under wing-coverts immaculate tawny-ochraceous, the inner webs of remiges broadly edged with a paler tint of same or ochraceous-buff; maxilla dusky horn color, paler toward culmen; mandible pale brownish (in dried skins); legs and feet horn brownish (in dried skins).

<sup>a</sup> While considerable variations in color-pattern are observable among specimens of all the forms of this species, in none of them do I find any differences that can be correlated with difference of sex—provided, of course, the latter has in all cases been correctly determined.

*Young*.—Pileum and hindneck dull slate color, with narrow mesial guttate streaks of buff; chest and breast similar but ground color rather lighter brownish slate and streaks broader; otherwise like adults, but middle and greater wing-coverts with distinct (though not sharply defined) terminal or subterminal spots of tawny, and with a very narrow terminal margin of black.

*Adult male*.—(No specimens with sex determined examined.)

*Adult female*.—Length (skins), 163–175 (169); wing, 114–116.5 (115.3); tail, 42–44 (43); culmen, 25.5–26 (25.7); tarsus, 46–50.5 (48.3); middle toe, 24–25.5 (24.3).<sup>a</sup>

Southern Mexico, in State of Chiapas (Tumbalá), Guatemala (forests of northern Vera Paz; Cobán; Choctúm; Calderas; Yaxcamnál; Savana Grande; Barranca Honda and Pajál Grande, Volcán de Fuego), Honduras (Santa Ana), and northern Nicaragua (Matagalpa).

*Grallaria guatemalensis* PRÉVOST and DES MURS, Zool. Voy. 'Venus,' Atlas, "1846"=1842, pl. 4 (Guatemala).—LAFRESNAYE, Rev. Zool., 1842, 334.—SCLATER, Proc. Zool. Soc. Lond., 1858, 280 (monogr.).

*Grallaria guatemalensis* PRÉVOST and DES MURS, Zool. Voy. 'Venus,' "1855"=1849, 199.—SCLATER and SALVIN, Ibis, 1859, 119 (Cobán, Guatemala).—SALVIN, Ibis, 1861, 354, in text (Vera Paz, Guatemala).—SCLATER, Cat. Am. Birds, 1862, 191 (Guatemala); Cat. Birds Brit. Mus., xv, 1890, 313 (Choctúm, Yaxcamnál, Savana Grande, Calderas, Volcán de Fuego, Barranca Honda, Volcan de Fuego, and Pajál Grande, Volcán de Fuego).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 240 (localities in Guatemala; Santa Ana, Honduras; Matagalpa, Nicaragua).

[*Grallaria*] *guatemalensis* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 75.—SHARPE, Hand-list, iii, 1901, 41 (Guatemala to Nicaragua).

(?) *Grallaria guatemalensis* ? RIDGWAY, Proc. U. S. Nat. Mus., xiv, 1891, 470 (Santa Ana, Honduras; descr. young).

[*Chamaeza*] *guatemalensis* BONAPARTE, Consp. Av., i, 1850, 204.

*Grallaria princeps* (not of Sclater and Salvin) BOUCARD, Ann. Soc. Linn. Lyon, 1878, 39 (Guatemala).

### GRALLARIA GUATIMALENSIS PRINCEPS (Sclater and Salvin).

#### COSTA RICAN ANTPITTA.

Similar to *G. g. guatemalensis* but smaller and more deeply colored, the black squamations of upper parts broader, the general color of under parts bright tawny to rufous-tawny.

*Adult male*.—Length (skins), 165–181 (172); wing, 110–115 (111.7); tail, 40–43 (41.3); culmen, 24.5–28.5 (27.4); tarsus, 44.5–52 (48); middle toe, 23–27 (25.2).<sup>b</sup>

<sup>a</sup> Two specimens. Five specimens with sex undetermined measure as follows: Wing, 104–120 (112.6); tail, 37–44 (40.9); culmen, 24–28 (26); tarsus, 49–51.5 (50.1); middle toe, 24–25.5 (24.3).

<sup>b</sup> Twelve specimens.

*Adult female*.—Length (skins), 167–181 (172); wing, 106.5–113.5 (111.1); tail, 37.5–42.5 (40); culmen, 25–27.5 (26.7); tarsus, 46.5–50 (48.6); middle toe, 25–26 (25.4).<sup>a</sup>

Costa Rica (La Estrella de Cartago; Faldas del Volcán de Barba; Volcan de Irazú; Turrialba; Juan Viñas; Carrillo; Escazú; Tenório) and western Panamá (Volcán de Chiriquí; Boquete; Santa Fé de Verágua; Calovévora).

*Grallaria guatemalensis* (not of Prévost) SALVIN, Proc. Zool. Soc. Lond., 1867, 146 (Santa Fé de Verágua, Panamá; crit.)—LAWRENCE, Ann. Lyc. N. Y., ix., 1868, 89 (Verágua).

*Grallaria princeps* SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1869, 418 (Calovévora, Verágua, Panamá; coll. Salvin and Godman).—SALVIN, Proc. Zool. Soc. Lond., 1870, 196 (Volcán de Chiriquí and Calovévora).—SCLATER, Ibis, 1877, 441 (Verágua; Chiriquí; monogr.); Cat. Birds Brit. Mus., xv, 1890, 314 (Irazú district, Costa Rica; Calovévora, Santa Fé, and Volcán de Chiriquí, Panama).—ZELEDÓN, Anal. Mus. Nac. Costa Rica, i, 1887, 115 (Turrialba, Costa Rica).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 241, pl. 52.—BANGS, Proc. New Engl. Zool. Club, iii, 1902, 42 (Boquete and Volcán de Chiriquí, Panamá, 7,000–11,000 ft.).

[*Grallaria*] *princeps* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 75.—SHARPE, Hand-list, iii, 1901, 41.

*Grallaria guatemalensis princeps* CARRIKER, Ann. Carnegie Mus., vi, 1910, 627 (Costa Rica; crit.; habits).

### GRALLARIA GUATIMALENSIS MEXICANA (Sclater).

#### MEXICAN ANTPITTA.

Similar to *G. g. guatimalensis* but slightly larger and paler in color, the back, etc., less brownish olive, the general color of under parts ochraceous instead of tawny-ochraceous or tawny; slate color of pileum and hindneck, however, rather darker.

*Adult male*.—Length (skins), 161–180 (170); wing, 104.5–111 (109.1); tail, 38–44.5 (42); culmen, 25.5–27 (26); tarsus, 43.5–49.5 (47.3); middle toe, 23–25 (24.3).<sup>b</sup>

*Adult female*.—Length (skins), 160–175 (166); wing, 107–113 (110); tail, 40.5–43 (41.5); culmen, 26.5–27 (26.7); tarsus, 46.5–47.5 (47); middle toe, 24–24.5 (24.2).<sup>c</sup>

Southeastern Mexico, in States of Vera Cruz (Córdova; Potrero, near Córdova; Uvero; San Andrés Tuxtla; Omealca; Jalapa; Moyoa-pám; Playa Vicente; Buena Vista; Motzorongo), and Tabasco (Teapa).

<sup>a</sup> Four specimens, from Costa Rica.

| Locality.                                            | Wing. | Tail. | Culmen. | Tarsus. | Middle toe. |
|------------------------------------------------------|-------|-------|---------|---------|-------------|
| Seven adult males from Costa Rica.....               | 112   | 41.3  | 27.1    | 48.3    | 25.3        |
| Five adult males from western Panamá (Chiriquí)..... | 111.8 | 41.3  | 27.6    | 47.6    | 25.1        |

<sup>b</sup> Four specimens.

<sup>c</sup> Three specimens.



- Grallaria guatemalensis* (not of Prévost) SCLATER, Proc. Zool. Soc. Lond., 1856, 294 (Córdova, Vera Cruz; crit.); 1858, 280, part (monogr.).
- Grallaria guatemalensis* SCLATER, Proc. Zool. Soc. Lond., 1859, 366 (Jalapa, Vera Cruz), 383 (Playa Vicente, Vera Cruz).—SUMICHRIST, La Naturaleza, v, 1881, 248 (Uvero, San Andrés Tuxtla, and Potrero, Vera Cruz).
- Grallaria guatemalensis*? SUMICHRIST, Mem. Bost. Soc. N. H., i, 1869, 556 (Uvero near San Andres Tuxtla, Potrero, and Omealca, Vera Cruz).
- [*Myiotrichas*] *guatemalensis* HEINE and REICHENOW, Nomencl. Mus. Hein. Orn., 1890, 123 (Mexico).
- Grallaria mexicana* SCLATER, Proc. Zool. Soc. Lond., 1861, 381 (Jalapa, Vera Cruz; coll. P. L. Sclater); 1864, 175 (near City of Mexico); Cat. Am. Birds, 1862, 191 (Jalapa); Ibis, 1877, 440 (tierra caliente of s. Mexico; monogr.; crit.); Cat. Birds Brit. Mus., xv, 1890, 313, part (Jalapa).—SUMICHRIST, La Naturaleza, v, 1881, 248 (Omealca, Vera Cruz).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 241, part (Moyoapám, Córdova, Omealca, Uvero, San Andrés Tuxtla, Potrero, Córdova, Playa Vicente, and Jalapa, Vera Cruz).
- Grallaria* —? SUMICHRIST, Mem. Bost. Soc. N. H., i, 1869, 556 (Moyoapám, Vera Cruz, 2,500 m.; crit.).
- [*Grallaria*] *mexicana* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 75.—SHARPE, Hand-list, iii, 1901, 41.

### GRALLARIA GUATEMALENSIS OCHRACEIVENTRIS (Nelson).

#### NELSON'S ANTPITTA.

Most like *G. g. mexicana* but coloration decidedly paler and much duller, the blackish squamations of upper parts narrower and less distinct (especially on pileum and hindneck, where sometimes nearly obsolete), forehead more extensively olive, and general color of under parts dull tawny-ochraceous to dull buff or clay color.

*Adult male*.—Length (skins), 180–198 (189); wing, 111–119.5 (115.2); tail, 46–49.5 (47.7); culmen, 25.5–26.5 (26); tarsus, 48.5–51 (49.7); middle toe, 25.5–26 (25.7).<sup>a</sup>

*Adult female*.—Length (skins), 178–199 (190); wing, 110.5–120 (115.7); tail, 45–52 (47.7); culmen, 27.5–29.5 (28.1); tarsus, 49–55 (52.1); middle toe, 25–28 (26.7).<sup>b</sup>

<sup>a</sup> Two specimens.

<sup>b</sup> Four specimens.

| Locality.                                       | Wing. | Tail. | Culmen. | Tarsus. | Middle toe. |
|-------------------------------------------------|-------|-------|---------|---------|-------------|
| MALES.                                          |       |       |         |         |             |
| One adult male from Omilteme, Guerrero.....     | 119.5 | 49.5  | 26.5    | 51      | 26          |
| One adult male from San Sebastián, Jalisco..... | 111   | 46    | 25.5    | 48.5    | 25.5        |
| FEMALES.                                        |       |       |         |         |             |
| Two adult females from Omilteme, Guerrero.....  | 117.5 | 48.7  | 28.2    | 53.2    | 27          |
| One adult female from mountains of Morelos..... | 110.5 | 45    | 28      | 49      | 26          |

Southwestern Mexico, in States of Jalisco (San Sebastián), Morelos (mountains) and Guerrero (Omiteme); Mexico (Valley of Mexico; Chimalpa; Ajusco)?

(?) *Grallaria mexicana* (not of Sclater, 1861?) SCLATER, Proc. Zool. Soc. Lond., 1864, 175 (Valley of Mexico); Cat. Birds Brit. Mus., xv, 1890, 313, part (western Mexico).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 241, part (Valley of Mexico, Chimalpa, and Ajusco, Mexico).

*Grallaria mexicana* SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 241, part (Omiteme, Guerrero).

*Grallaria ochraceiventris* NELSON, Proc. Biol. Soc. Wash., xii, Mar. 24, 1898, 62 (San Sebastián, Jalisco; coll. U. S. Nat. Mus.).

[*Grallaria*] *ochraceiventris* SHARPE, Hand-list, iii, 1901, 41.

### Genus HYLOPEZUS Ridgway.

*Hylopezus*<sup>a</sup> RIDGWAY, Proc. Biol. Soc. Wash., xxii, Apr. 17, 1909, 71. (Type, *Grallaria perspicillata* Lawrence.)

Medium-sized terrestrial Formicariidæ (length about 120–125 mm.) with very long, slender, booted (nonscutellate) tarsi (more than two-fifths as long as wing), very short tail (one-third to about two-fifths as long as wing), slender bill, no rictal bristles, and under parts partly white, with chest more or less streaked with black.

Bill shorter than head, slender, rather broad and depressed basally, its width at loral antiæ greater than its depth at same point and equal to half or more the distance from nostril to tip of maxilla; culmen distinctly but not sharply ridged, straight basally, then gradually decurved, the tip of maxilla slightly uncinate; tomia nearly straight, that of maxilla distinctly notched subterminally, the mandibular notch very indistinct or obsolete; gonys convex and prominent basally, nearly straight and ascending terminally. Nostril exposed, horizontally oval, posteriorly nearly in contact with loral feathering, margined above by a narrow extension of the membranous integument of the nasal fossæ, an internal tubercle or septum showing within the upper posterior portion. Rictal bristles obsolete, but feathers of malar and loral regions with bristly shafts. Wing moderate, with longest primaries projecting decidedly beyond secondaries; sixth and seventh, fifth, sixth, and seventh, or fifth and sixth, primaries longest, the tenth (outermost) a little less than three-fifths to slightly more than two-thirds as long as the longest, the ninth much shorter than secondaries (*H. dives*)<sup>b</sup> or longer than secondaries (other species). Tail one-third (*H. perspicillatus*) to about two-fifths (*H. macularius*) as long as wing, very slightly rounded, the rectrices (12) rather broad, rounded terminally. Tarsus slightly more than two-fifths to nearly half as long as wing, slender,

<sup>a</sup> ὕλη, a wood, forest; πεζός, walking.

<sup>b</sup> In *H. dives* even the eighth primary (third from outside) is much shorter than the secondaries.

booted (nonscutellate) or with scutella of acrotarsium faintly defined; middle toe, with claw, slightly more than three-fifths as long as tarsus (as long as or slightly longer than whole culmen); outer toe, without claw, reaching to or slightly beyond subterminal articulation of middle toe, the inner toe slightly shorter; hallux shorter than inner toe, considerably but not conspicuously stouter; basal phalanx of middle toe united for about half its length to outer toe, for less than half to inner toe; claws rather short, slightly curved, that of hallux decidedly shorter than the digit. Plumage full, soft, and blended, that of rump and flanks (especially the former) more elongated and lax, that of pileum short, with feathers distinctly outlined; a very small naked postocular space.

*Coloration*.—Above olive (more grayish or dusky on pileum) the back sometimes streaked with buff, the wings sometimes varied with buff or tawny; a buff orbital ring (indistinct or obsolete in *H. dives*); under parts with at least throat and abdomen white, the chest, sides, and flanks more or less buffy, ochraceous, or tawny, the first (at least) more or less streaked with black; sexes alike.

*Range*.—Nicaragua to Cayenne, southeastern Brazil, and western Ecuador.

(About nine species.<sup>a</sup>)

#### KEY TO THE SPECIES AND SUBSPECIES OF HYLOPEZUS.

*a*. Wing-coverts unspotted; chest deep tawny-ochraceous, very narrowly streaked with black. (Caribbean slope of Nicaragua and Costa Rica.)

***Hylopezus dives* (p. 154).**

*aa*. Wing-coverts conspicuously spotted with buff or ochraceous; chest white or buffy, very heavily streaked with black.

*b*. Flanks light grayish buffy, streaked with dusky. (*Hylopezus perspicillatus*.)

*c*. Back and scapulars conspicuously streaked with buff. (Eastern Panamá.)

***Hylopezus perspicillatus perspicillatus* (p. 155).**

*cc*. Back and scapulars inconspicuously or not at all streaked. (Western Panamá and southwestern Costa Rica.)...***Hylopezus perspicillatus lizanoi* (p. 156).**

*bb*. Flanks bright buffy or tawny-buff, unstreaked.

*c*. Chest more heavily and more extensively streaked with black; buffy spots on wing-coverts more sharply defined; outer web of primaries brownish tawny. (Caribbean slope of Costa Rica and Nicaragua.)

***Hylopezus perspicillatus intermedius* (p. 156).**

*cc*. Chest less heavily and less extensively streaked with black; buffy spots on wing-coverts less sharply defined; outer web of primaries olive-brown. (Guiana and Amazon Valley.).....***Hylopezus macularius* (extralimital).<sup>b</sup>**

<sup>a</sup> Of these I have examined only *H. dives* (Sclater), *H. intermedius* (Ridgway), *H. lizanoi* (Cherrie), *H. perspicillatus* (Lawrence) and *H. macularius* (Temm. & L.).

<sup>b</sup> *Pitta macularia* Temminck, Pl. Col., ii, livr. 85, July, 1830, in text to Genus *Pitta*, sp. 11 (Brazil).—*C[olobathris] macularia* Cabanis, in Wiegmann, Archiv für Naturg., 1847, pt. i, 217.—*Grallaria macularia* Lafresnaye, Rev. Zool., 1842, 334; Sclater, Cat. Birds Brit. Mus., xv, 1890, 324.



## HYLOPEZUS DIVES (Salvin).

## DIVES ANTPITTA.

*Adults (sexes alike).*—Pileum and hindneck dull slate color, indistinctly streaked or squamated with slate-blackish; rest of upper parts dull slate color anteriorly passing into olive posteriorly, the feathers (especially the scapulars) with very narrow and mostly indistinct shaft-streaks of pale buffy; upper tail-coverts and tail russet-brown or vandyke brown; general color of wings deep olive-brown, the outer webs of primaries paler and more rufescent brown; outermost feather of alula edged with buff or ochraceous-buff; loreal, orbital, and suborbital regions buff, more or less flecked with dusky, the lower-anterior portion of auricular region deeper buffy; upper-posterior portion of auricular region dull slate color, more or less tinged with olive; malar region, chin, and throat white or buffy white, the first more or less flecked with dusky; chest and sides of breast ochraceous, the feathers with median or central portion paler and edged with black, producing a streaked effect; sides, flanks, under tail-coverts and under wing-coverts plain ochraceous to rufous-tawny; inner webs of remiges passing into dull vinaceous-cinnamon on edges; maxilla brownish, paler along tomia, darker (sometimes nearly black) on culmen; mandible pale dull yellowish (in dried skins), usually tinged with brownish laterally or terminally; legs and feet pale yellowish or yellowish brown (in dried skins).

*Adult male.*—Length (skins), 118–129 (124); wing, 73.5–78 (75.8); tail, 29–31 (30); culmen, 19–19.5 (19.3); tarsus, 37; middle toe, 18–20.5 (19.2).<sup>a</sup>

*Adult female.*—Length (skin), 119; wing, 75; tail, 30; culmen, 18; tarsus, 36; middle toe, 19.

Caribbean slope of Costa Rica (Tucurríqui; Jiménez; Guácimo; La Vijágua) and Nicaragua (Chontales; Greytown; Rio Escondido; Los Sábalos).

*Grallaria dives* SALVIN, Proc. Zool. Soc. Lond., 1864 (pub. April 1, 1865), 582 (Tucurríqui, e. Costa Rica; coll. Salvin and Godman); Ibis, 1872, 313 (Chontales, Nicaragua).—LAWRENCE, Ann. Lyc. N. Y., viii, 1865, 182 (Greytown, Nicaragua); ix, 1868, 110 (Tucurríqui, Costa Rica).—FRANTZIUS, Journ. für Orn., 1869, 306 (Costa Rica).—SCLATER, Ibis, 1877, 450 (Tucurríqui, Costa Rica; Chontales, Nicaragua; monogr.; crit.); Cat. B. Brit. Mus., xv, 1890, 323 (do.).—NUTTING, Proc. U. S. Nat. Mus., vi, 1883, 406 (Los Sábalos, Nicaragua).—RIDGWAY, Proc. U. S. Nat. Mus., vi, 1883, 406, footnote (crit.; Greytown and Los Sábalos).—CHERRIE, Proc. U. S. Nat. Mus., xiv, 1891, 534 (Costa Rica; descr. young).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 243, pl. 53, fig. 1.—RICHMOND, Proc. U. S. Nat. Mus., xvi, 1893, 504 (Rio Escondido, Nicaragua).

[*Grallaria*] *dives* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 76.—SHARPE, Hand-list, iii, 1901, 43.

<sup>a</sup> Three specimens.

*Hylopezus dives* CARRIKER, Ann. Carnegie Mus., vi, 1910, 628 (Costa Rica).

*Grallaricula perspicillata* (not *Grallaria perspicillata* Lawrence) SCLATER, Ibis, 1873, 373 (Chontales, Nicaragua).

**HYLOPEZUS PERSPICILLATUS PERSPICILLATUS (Lawrence).**

**LAWRENCE'S ANTPITTA.**

*Adults (sexes alike).*—Pileum and hindneck plain slate color, passing into light olive on forehead, the feathers sometimes with very narrow and indistinct shaft-streaks of paler; rest of upper parts olive, the scapulars and interscapulars with more or less distinct mesial (usually guttate) streaks of buff, these sometimes margined with blackish; general color of wings rather browner olive than back, etc., the wing-coverts with terminal (usually triangular) spots of buff or ochraceous, outer web of exterior feather of alula buff, the outer webs of primaries with a basal area of dull ochraceous followed by a space of olive, the remaining portion pale ochraceous-brown; a broad and conspicuous orbital ring of buff or ochraceous-buff; lores buff, with middle portion (vertically) black or dusky; suborbital region and anterior portion of auricular region buff, the former barred or flecked with black; auricular region (except lower-anterior portion) olive, with narrow shaft-streaks of buff; malar region and under parts white, the chest, breast (except median portion), and sides broadly streaked with black and tinged or suffused with buff, the flanks olive with indistinct broad streaks or flammulations of pale yellowish buff; under tail-coverts buff; under wing-coverts and broad edgings to inner web of remiges bright ochraceous or ochraceous-buff, the coverts near edge of wing more or less streaked with dusky; maxilla dark brown, usually paler terminally; mandible pale dull yellowish (in dried skins), brownish terminally; iris light brown;<sup>a</sup> legs and feet light brownish (in dried skins).

*Adult male.*—Length (skins), 118–129 (125); wing, 77.5–82.5 (79.9); tail, 26.5–30 (28.7); culmen, 18–20 (18.8); tarsus, 34–37.5 (35.2); middle toe, 16–18.5 (17.1).<sup>b</sup>

*Adult female.*—Length (skins), 125–126 (125.5); wing, 78–79.5 (78.7); tail, 28–30 (29); culmen, 19; tarsus, 34–36.5 (35.2); middle toe, 16.5–18 (17.4).<sup>c</sup>

Panamá (Lion Hill); Panamá; Natá, Coclé; Divala; Santa Fé de Verágua; Santiago de Verágua; Mina de Chorchá; Volcán de Chiriquí).

*Grallaria perspicillata* LAWRENCE, Ann. Lyc. Nat. Hist. N. Y., vii, 1862, 303, 326 (Lion Hill, Panamá; coll. G. N. Lawrence).—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1864, 357 (Lion Hill).—SALVIN, Proc. Zool. Soc. Lond., 1867, 146 (Santa Fé and Santiago de Verágua, Panamá); 1870, 196 (Volcán de Chiriquí and Mina de Chorchá, Panamá).—SCLATER, Ibis, 1877,

<sup>a</sup> Heyde, manuscript.

<sup>b</sup> Five specimens.

<sup>c</sup> Four specimens.

- 449 (Panamá; monogr.; crit.); Cat. Birds Brit. Mus., xv, 1890, 325, excl. syn. part (Panamá; Santa Fé, Mina de Chorchá, and Volcán de Chiriquí, Panama).—RIDGWAY, Proc. U. S. Nat. Mus., vi, 1884, 406, footnote (crit.).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 242, pl. 53, fig. 2. [*Grallaria*] *perspicillata* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 76, part (Panamá).—SHARPE, Hand-list, iii, 1901, 44, part (Panamá).

### HYLOPEZUS PERSPICILLATUS LIZANOI (Cherrie).

#### LIZANO'S ANTPITTA.

Similar to *H. p. perspicillatus* but back and scapulars plain olive (or with only a few very narrow streaks of buff on extreme upper back), the olive much more grayish, brown, or olive area on middle of primaries much less distinct (sometimes obsolete), and chest and sides usually more strongly suffused with yellowish buff.

*Adult male*.—Length (skins), 120–135 (126); wing, 79–84.5 (81.7); tail, 26.5–32 (30.2); culmen, 19–20.5 (19.6); tarsus, 34–37.5 (35.8); middle toe, 16.5–18.5 (17.3).<sup>a</sup>

*Adult female*.—Length (skins), 115–132 (125); wing, 79–84.5 (82.4); tail, 27.5–32 (30.2); culmen, 19–21 (19.8); tarsus, 32.5–37 (34.8); middle toe, 16.5–18 (17.5).<sup>a</sup>

Southwestern Costa Rica (Pozo Azul de Pirrís; Pirrís; Pozo del Pitál, Rio Naranjo; Pozo de Térraba; Térraba; Boruca, Paso Real and Pozo del Rio Grande, Boruca; Lagarto; Buenos Aires; Las Trojas; El General) and western Panamá (Dívala).

*Grallaria intermedia* (not of Ridgway) ZELEDÓN, Anal. Mus. Nac. Costa Rica, i, 1887, 115, part (Pozo Azul de Pirrís, s. w. Costa Rica).

*Grallaria lizanoi* CHERRIE, Proc. U. S. Nat. Mus., xiv, no. 855, Sept. 4, 1891, 342 (Las Trojas, s. w. Costa Rica; coll. U. S. Nat. Mus.); Anal. Inst. Fis.-Geog. Costa Rica, vi, 1893, 19 (Pozo del Pitál, s. w. Costa Rica); Expl. Zool. Merid. Costa Rica, 1893, 44 (Lagarto, Boruca, Térraba, and Buenos Aires, s. w. Costa Rica).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 243.—BANGS, Auk, xxiv, 1907, 298 (Boruca, Paso Real, and Pozo del Rio Grande, s. w. Costa Rica).

[*Grallaria*] *lizanoi* SHARPE, Hand-list, iii, 1901, 44.

*Hylopezus lizanoi* CARRIKER, Ann. Carnegie Mus., vi, 1910, 629 (Pacific slope Costa Rica, up to 1,500 ft.).

### HYLOPEZUS INTERMEDIUS (Ridgway).

#### TALAMANCA ANTPITTA.

Similar to *H. p. lizanoi* but flanks and posterior portion of sides clear plain ochraceous or ochraceous-buff.

*Adult male*.—Length (skins), 114–137 (128); wing, 78–83 (80.5); tail, 25.5–32 (29.4); culmen, 17–20 (19); tarsus, 34–37 (35.7); middle toe, 17–18.5 (17.3).<sup>a</sup>

<sup>a</sup> Ten specimens.



*Adult female*.—Length (skins), 113–134 (123); wing, 77–82 (79.6); tail, 27–35 (29); culmen, 18–20 (19.2); tarsus, 35–38.5 (36.2); middle toe, 16.5–18 (17.2).<sup>a</sup>

Caribbean slope of Costa Rica (Angostura; Talamanca; Santa Clara; Jiménez; San Carlos; La Balsa; El Hogár; Guápiles; Cuábree; Guácimo; Volcán de Turrialba; La Florída; La Cristina; La Vijágua) and Nicaragua (San Emilis, Lake Nicaragua).

*Grallaria perspicillata* (not of Lawrence, 1861) LAWRENCE, Ann. Lyc. N. Y., ix, 1868, 110 (Angostura, Costa Rica).—FRANTZIUS, Journ. für Orn., 1869, 306 (Costa Rica).—BOUCARD, Proc. Zool. Soc. Lond., 1878, 62 (San Carlos, Costa Rica).—SCLATER, Cat. Birds Brit. Mus., xv, 1890, 325, part (syn. part; "Valza," i. e., La Balsa, Costa Rica).

[*Grallaria*] *perspicillata* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 76, part (Costa Rica).—SHARPE, Hand-list, iii, 1901, 44, part (Costa Rica).

*G[rallaria] intermedia* RIDGWAY, Proc. U. S. Nat. Mus., vi, no. 26, April 11, 1884, 406, footnote (Talamanca, Costa Rica; coll. U. S. Nat. Mus.).

*Grallaria intermedia* ZELEDÓN, Anal. Mus. Nac. Costa Rica, i, 1887, 115, part (Jiménez, Costa Rica).—CHERRIE, Proc. U. S. Nat. Mus., xiv, 1891, 534 (Jiménez; crit.).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 243 (Angostura, La Balsa, Talamanca, Jiménez, and San Carlos, Costa Rica).

[*Grallaria*] *intermedia* SHARPE, Hand-list, iii, 1901, 44.

*Hylopezus intermedius* CARRIKER, Ann. Carnegie Mus., vi, 1910, 629 (Caribbean lowlands of Costa Rica up to 800 or 900 ft.; crit.; habits).

## Family FURNARIIDÆ.

### THE OVEN BIRDS.

Tracheophone Mesomyodian Passeres, with the metasternum 2-notched, interorbital septum perforate, maxillo-palatines very long and slender (and continued backward to or beyond the level of the free end of the median descending plate of the palatine), tensor patagii brevis tendon normally passerine, nares schizorhinal, syrinx tracheal (with two pairs of short tracheo-bronchial muscles), palate schizognathous, mesorhinium normal, tarsal envelope endaspidean, outer toe much shorter than middle toe, hallux (without claw) not shorter than inner toe (without claw), and middle toe united to outer toe by less than the whole of its second phalanx (usually for more or less of first phalanx only).

>*Anabatidæ* CABANIS, Wiegmann's Archiv für Naturg., 1847, pt. i, 230, 338 (includes Dendrocolaptidæ).—CABANIS and HEINE, Mus. Hein., ii, 1860, 22.—CARUS, Handb. Zool., 1868, 266.

=*Anabatidæ* BONAPARTE, Consp. Av., i, 1850, 210.—HUXLEY, Proc. Zool. Soc. Lond., 1867, 471, in text.

=*Anabatinae* CABANIS, Wiegmann's Archiv für Naturg., 1847, pt. i, 338.

<*Furnariinæ* CABANIS, Wiegmann's Archiv für Naturg., 1847, pt. i, 339.—SUNDEVALL, Met. Nat. Av. Disp. Tent., ii, 1872, 55 (English translation, 1889, 121).—GARROD, Proc. Zool. Soc. Lond., 1877, 452.

× *Furnariinæ* CABANIS and HEINE, Mus. Hein., ii, 1860, 22 (includes *Rhodinicichla*).—SCLATER, Cat. Am. Birds, 1862, 146.

= *Furnariidæ* STEJNEGER, Stand. Nat. Hist., iv, 1885, 479, in text.

< *Synallaxinæ* CABANIS and HEINE, Mus. Hein., ii, 1860, 26.—SCLATER, Cat. Am. Birds, 1862, 149.—SUNDEVALL, Met. Nat. Av. Disp. Tent., ii, 1872, 55 (English translation, 1889, 122).

The Furnariidæ are closely related to the Dendrocolaptidæ and have usually been included in the same family, as Subfamilies Furnariinæ, Synallaxinæ, Philydorinæ, and Sclerurinæ,<sup>a</sup> three Furnariine genera being even referred to the "Subfamily Dendrocolaptinæ."<sup>b</sup> Prof. Garrod and Dr. Stejneger, however, have shown<sup>c</sup> that in their schizorhinal, instead of holorhinal, skull and dissimilar feet they differ sufficiently to warrant their recognition as a distinct family.

Although distributed throughout the continental portions of the Neotropical Region, the Furnariidæ are most developed in the Patagonian and South-Brazilian Subregions, to which many of the genera, among them the most typical ones, are peculiar, comparatively few of them passing to the northward of the Isthmus of Panama, only 25 of the more than 278 species and 10 of the 37 genera<sup>d</sup> belonging to the Central American district.

While some of the genera resemble Dendrocolaptine forms in external appearance, and presumably in habits also, the majority of the Furnariidæ are more terrestrial; some of them eminently so, and strongly recalling in their appearance and general habits the Larks (*Alaudidæ*) and Stone-chats. Many of them inhabit reedy marshes, and bear a superficial likeness to the marsh-wrens (genera *Telmato-dytes* and *Cistothorus*), while certain small long-tailed short-billed forms, as *Leptasthenura*, recall the Parine genus *Psaltiriparus*, others again resembling Creepers (*Certhiidæ*).

Many of the species, particularly those belonging to the so-called Subfamily Furnariinæ, are remarkable for the unusual character of their nests, which, in some cases, consist of massive oven-like structures built of mud or clay, in others immense heaps of twigs, whence the builders have received the name of "fagot-gatherers" from the human inhabitants of the country.

What has been said concerning the unsatisfactory classification of the Formicariidæ<sup>e</sup> and my efforts to devise a better one applies as well to the present group.

<sup>a</sup> See Catalogue of the Birds in the British Museum, vol. xv., pp. xi-xiii, 2-126. (By Philip Lutley Sclater.)

<sup>b</sup> Genera *Margarornis*, *Premnoplex*, and *Pygarrhicus*.

<sup>c</sup> See Garrod, Proc. Zool. Soc. Lond., 1877, pp. 449-452, and Stejneger, Standard Natural History, vol. iv, Birds, 1885, pp. 478, 481.

<sup>d</sup> As enumerated in Sharpe's Hand-list of the Genera and Species of Birds, vol. iii, 1901, pp. 45-74, under Dendrocolaptidæ.

<sup>e</sup> See p. 9.

KEY TO THE CENTRAL AMERICAN GENERA OF FURNARIIDÆ.<sup>a</sup>

- a. Maxillary tomium with a distinct (though small) subterminal notch; outer toe united to middle toe by the whole of its first and second phalanges and at least half of its third phalanx; tarsus indistinctly scutellate (smooth on inner side); tail less than three times as long as tarsus, the rectrices with very rigid shafts, whose denuded tips are not protruded. (*Sclerurinae*). . . . . **Sclerurus** (p. 163).
- aa. Maxillary tomium without trace of notch; outer toe united to middle toe by not more than whole of its first and second phalanges (usually by less than whole of its first phalanx); tarsus distinctly scutellate; tail more than three times as long as tarsus,<sup>b</sup> the rectrices without rigid shafts or else with the attenuated or acuminate tips not denuded but protruded. (*Furnariinae*).
- b. Maxilla with tip not at all decurved, but with tomia ascending (more or less strongly) terminally; mandible strongly recurved (falcate) terminally.
- c. Outer toe not conspicuously (though distinctly) longer than inner toe, reaching (without claw) only to middle of subterminal phalanx of middle toe; outer toe with first and second phalanges united to middle toe; bill relatively shorter and stouter, the exposed culmen decidedly shorter than tarsus; tip of rectrices normal. . . . . **Xenops** (p. 170).
- cc. Outer toe conspicuously longer than inner toe, reaching (without claw) much beyond middle of subterminal phalanx of middle toe; outer toe with only its first phalanx united to middle toe; bill relatively longer and more slender, the exposed culmen as long as tarsus; tips of rectrices (except lateral ones) attenuated, stiffened, and decurved.
- Pygarrhicus** (extralimital).<sup>c</sup>
- bb. Maxilla with tip more or less distinctly decurved, the tomia more or less decurved or descending terminally; mandible not recurved terminally (or else tip of maxilla decurved).
- c. Nostril narrow, longitudinal, distinctly operculate.
- d. Tarsus shorter than middle toe with claw; outer toe with first phalanx and at least part of second phalanx united to middle toe. (*Margarornithes*).
- e. Wing longer (nearly four times to more than four times as long as tarsus) and more pointed, the primaries exceeding secondaries by at least length of exposed culmen, sometimes by length of tarsus; bill relatively shorter, the exposed culmen much shorter than middle toe without claw; inner webs of remiges crossed by a broad band or with an extensive basal area of buff or ochraceous.
- f. Tail graduated for only about one-third its length, with tip of rectrices (except outer ones) excessively acuminate, the slender points conspicuously protruded; wing more than four times as long as tarsus; inner webs of remiges crossed by a broad sub-basal band of buff or ochraceous. . . . . **Margarornis** (p. 177).
- ff. Tail excessively graduated (for much more than half its length), with tips of rectrices not distinctly acuminate, the minute slender points

<sup>a</sup> Including, for comparison, a few related extralimital genera.

<sup>b</sup> The proportionate length of tail and tarsus, as a subfamily character, will probably not apply to some of the exclusively South American genera.

<sup>c</sup> *Pygarrhicus* Burmeister, Handb. der Naturg., 1837, 769. Type, *Dendrocolaptes albigularis* King.—*Dendrodramus* Gould, Zool. Voy. "Beagle," iii, 1841, 82. Type, *Dendrocolaptes albigularis* King.—*Dromodendron* Gray, List Gen. Birds, 1842, App., p. 6. Type, *Dendrocolaptes albigularis* King. (Southern Chile and southwestern Argentina; monotypic.)



- very slightly protruded; wing less than four times as long as tarsus; inner webs of remiges with an extensive basal area of ochraceous or pale tawny.....*Premnornis* (extralimital).<sup>a</sup>
- ee. Wing shorter (less than three and a half times as long as tarsus) and more rounded, the primaries exceeding secondaries by less than length of exposed culmen; bill relatively longer, the exposed culmen as long as middle toe without claw; inner webs of remiges without buff or ochraceous cross-band or basal area.....*Premnoplex* (p. 180).
- dd. Tarsus longer than middle toe with claw; outer toe with second phalanx entirely free from middle toe, the first phalanx also often partly free.
- e. Basal phalanx of middle toe partly free from outer toe; bill more subulate or terete, with culmen more or less distinctly curved (at least terminally), the mesorhinium more or less rounded or else much compressed; wing relatively shorter and more rounded, the longer primaries exceeding secondaries by less than length of exposed culmen; no tuft on sides of neck; smaller forms (wing less than 80 mm.) (*Synallaxis*).
- f. Rectrices 12.
- g. Tail much shorter than wing; hallux (without claw) longer than outer toe (without claw); wing four times as long as tarsus.  
*Siptornis* (extralimital).<sup>b</sup>
- gg. Tail longer (sometimes very much longer) than wing; hallux (without claw) not longer than outer toe (without claw); wing not more than three and a half times as long as tarsus (usually much less).
- h. Tarsus at least one-third as long as wing; frontal feathers extending farther forward, covering most of nasal operculum and concealing greater part of nostril.
- i. Bill much stouter, with culmen much more strongly curved, more compressed, and sharply ridged; rictus abruptly and strongly deflected.
- j. Tarsus decidedly more than one-third as long as wing; wing about two-thirds as long as tail; mesorhinium elevated, extremely compressed.....*Driocistis* (extralimital).<sup>c</sup>
- jj. Tarsus not more than one-third as long as wing; wing more than three-fourths as long as tail; mesorhinium not elevated nor unusually compressed.
- k. Wing only four-fifths as long as tail, the latter graduated for nearly two-thirds its length; tarsus not longer than middle toe with claw; bill relatively longer and narrower; feathers of chest with thickened or widened shafts.

*Phaceloscenus* (extralimital).<sup>d</sup>

<sup>a</sup> *Premnornis* Ridgway, Proc. Biol. Soc. Wash., xxii, April 17, 1909, 71. Type, *Margarornis guttata* Lawrence. (Colombia and Ecuador; monotypic.)

This genus presents a very close superficial resemblance to the automoline genus *Heliobletus* Reichenbach (see p. 162) but may easily be distinguished by the very different nostrils and other structural characters.

<sup>b</sup> *Siptornis* Reichenbach, Handb. der Spec. Orn., 1853, 171. Type, *Synallaxis striaticollis* Lafresnaye. (Colombia and Ecuador; monotypic.)

<sup>c</sup> *Driocistis* Ridgway, Proc. Biol. Soc. Wash., xxii, April 17, 1909, 71. Type, *Thripophaga sclateri* Berlepsch. (Southeastern Brazil; Bolivia?; three species?.)

I have not seen *Anabates erythrocephalus* Maximilian nor *Thripophaga fusciceps* Sclater, one or both of which may be congeneric with *Driocistis sclateri*. The genus is exceedingly distinct from *Thripophaga*.

<sup>d</sup> *Phaceloscenus* Ridgway, Proc. Biol. Soc. Wash., xxii, April 17, 1909, 71. Type, *Anumbius striaticollis* D'Orbigny and Lafresnaye. (Argentina and Uruguay; monotypic?.)

- kk.* Wing very nearly as long as tail (more than eight-ninths as long), the latter graduated for only half its length; tarsus longer than middle toe with claw; bill relatively shorter and deeper; feathers of chest without thickened or widened shafts.....*Phacellodomus* (extralimal).<sup>a</sup>
- ii.* Bill much more slender, with culmen much less strongly curved (usually nearly straight), less compressed, less sharply ridged; rictus not deflected.....*Asthenes* (extralimal).<sup>b</sup>
- hh.* Tarsus much less than one-third as long as wing; frontal feathers not extending so far forward, the nostrils and nasal operculum being uncovered for much the greater part.
- i.* Larger (wing more than 70 mm., exposed culmen more than 15 mm.); conspicuously streaked both above and below.  
*Thripophaga* (extralimal).<sup>c</sup>
- ii.* Smaller (wing less than 70 mm., exposed culmen less than 15 mm.); without streaks (except sometimes, on pileum.)  
*Acrochilus* (p. 183).
- ff.* Rectrices 10.
- g.* Tail not more than one and a half times as long as wing (usually much less, sometimes shorter than wing); upper parts not streaked.  
*Synallaxis* (p. 186).
- gg.* Tail nearly twice as long as wing; upper parts streaked.  
*Schoeniophylax* (extralimal).<sup>d</sup>
- ee.* Basal phalanx of middle toe wholly united to outer toe; bill more wedge-shaped, with culmen nearly straight (if curved more so toward base than terminally), the mesorhinium flattened; wing relatively longer

<sup>a</sup> *Phacellodomus* Reichenbach, Handb. der Spec. Orn., 1853, 169. Type, *Anabates rufifrons* Maximilian.—*Phacellodomus* (emendation) Sclater, Cat. Birds. Brit. Mus., xv, 1890, 79.—*Placellodomus* (emendation) Sclater and Salvin, Proc. Zool. Soc. Lond., May, 1868, 141.—*Phacellodromus* (emendation) Bonaparte, Ann. Sci. Nat. (Zool.), 4 sér., i, 1854, 132.

<sup>b</sup> *Asthenes* Reichenbach, Handb. der Spec. Orn., 1853, 168. Type, *Synallaxis sordida* Lesson. (Andes of Colombia to Chile, Argentina, etc.; at least eight species.)

This group unquestionably requires subdivision, but I have not a sufficient representation of the species to justify an attempt to do so. Besides the type-species I have examined the following: *A. humicola* (Kittlitz), *A. modesta* (Eyton), *A. anthoides* (King), *A. wyatti* (Sclater and Salvin), *A. sulphurifera* (Burmeister), *A. striaticeps* (D'Orbigny and Lafresnaye), and *A. maluroides* (D'Orbigny and Lafresnaye). The three last are almost certainly distinct generically. Probably nearly related to *Asthenes*, if not actually belonging to it, are the following species, referred, like the others, to *Siptornis* by recent authorities: *S. orbignii* (Reichenbach), *S. arequipæ* (Sclater and Salvin), *S. humilis* (Cabanis), and *S. pudibunda* (Sclater). How nearly related may be *S. albiceps* (Lafresnaye and D'Orbigny) and *S. albicapilla* (Cabanis)—the former being the type of *Cranioleuca* Reichenbach (Handb. der Spec. Orn., 1853, 167)—I am unable to say, not having seen either.

<sup>c</sup> *Thripophaga* Cabanis, Wiegmann's Archiv für Naturg., xiii, pt. i, 1847, 338. Type, *Sphenura striolata* Lichtenstein. (Southeastern Brazil; Colombia?; two species?.)

I have not seen *T. guttuligera* Sclater, from Colombia, which may or may not be congeneric with *T. striolata*.

<sup>d</sup> *Schoeniophylax* Ridgway, Proc. Biol. Soc. Wash., xxii, April 17, 1909, 71. Type, *Sylvia phryganophila* Vieillot. (Southern Brazil, Paraguay, Uruguay, and Argentina; monotypic?.)

and more pointed, the longest primaries exceeding secondaries by more than length of exposed culmen; a tuft of elongated soft feathers on each side of neck; larger (wing 95 mm. or more). (*Pseudocolaptes*.)

**Pseudocolaptes** (p. 196).

cc. Nostril oval or roundish, not distinctly operculate. (*Automolus*.)

d. Basal phalanx of middle toe wholly united to both outer and inner toes.

e. Bill much longer, the exposed culmen longer than tarsus, its length from nostril equal to two and a half times its depth at loral antiae.

**Hylocistis** (p. 199).

ee. Bill much shorter, the exposed culmen shorter than tarsus, its length from nostril equal to but little more than twice its depth at loral antiae.

f. Bill relatively broader basally and more compressed terminally, the tip of maxilla abruptly and strongly uncinat; upper parts conspicuously streaked.....**Ancistrops** (extralimital).<sup>a</sup>

ff. Bill relatively narrower basally and less compressed terminally, the tip of maxilla not abruptly nor strongly, if at all, uncinat; upper parts not streaked.

g. Bill excessively compressed, its width at loral antiae equal to only about two-thirds its depth at same point and less than one-third the distance from nostril to tip of maxilla; claw of hallux very large, as long as the digit.....**Anabazenops** (extralimital).<sup>b</sup>

gg. Bill only moderately compressed, its width at loral antiae equal to more than two-thirds its depth at same point and more than one-third the distance from nostril to tip of maxilla; claw of hallux smaller, decidedly shorter than the digit.....**Philydor** (p. 201).

dd. Basal phalanx of middle toe not wholly united to lateral toes.

e. Bill relatively smaller, more slender, more compressed, its width at loral antiae much less than its depth at same point, not distinctly if at all uncinat; shafts of rectrices softer at tip.

f. Bill smaller, the culmen (from base) shorter than tarsus; anterior toes more extensively united basally.

g. Bill smaller and more slender, more decurved terminally, with gonyes not ascending terminally.....**Heliobletus** (extralimital).<sup>c</sup>

gg. Bill larger and stronger, less decurved terminally (except at extreme tip), with gonyes strongly ascending terminally.

**Xenicopsis** (p. 205).

ff. Bill larger, the culmen (from base) longer than tarsus; anterior toes less extensively united basally.....**Automolus** (p. 211).

ee. Bill larger and stouter, less compressed, its width at loral antiae nearly equal to its depth at same point, distinctly uncinat; shafts of rectrices more rigid at tip.....**Rhopoctites** (p. 222).

<sup>a</sup> *Ancistrops* Sclater, Cat. Am. Birds, 1862, 157. Type, *Anabates lineaticeps* Sclater = *Thamnophilus strigilatus* Spix. (Upper Amazon Valley; monotypic.)

<sup>b</sup> *Anabazenops* Lafresnaye, Dict. Univ. d'Hist. Nat., i, 1841, 411. Type, *Sitta fusca* Vieillot.—*Anabatoides* Burmeister, Syst. Ueb. Th. Bras., iii, 1856, 23. Type, *Sitta fusca* Vieillot. (Southeastern Brazil; monotypic.)

<sup>c</sup> *Heliobletus* Reichenbach, Handb. der Spec. Orn., 1853, 201. Type, *Dendrocolaptes superciliosus* Lichtenstein. (Southeastern Brazil; monotypic.)



Genus *SCLERURUS* Swainson.

*Sclerurus* SWAINSON, Zool. Journ., iii, 1827, 356. (Type, *Myiothera umbretta* Lichtenstein.)

*Scelurus* (typographical error?) BURMEISTER, Syst. Ucb. Th. Bras., iii, 1856, 45.

*Tinactor* MAXIMILIAN, Beitr. Naturg. Bras., iii, pt. ii, 1831, 1106. (Type, *T. fuscus* Maximilian.)

*Oxypyga* <sup>a</sup> MÉNÉTRIÉS, Mem. de l'Acad. St. Pétersb., sér. vi, Sci. Nat., i, 1835, 519. (Type, *O. scansor* Ménériés=*Myiothera umbretta* Lichtenstein.)

*Oxyptiga* LESSON, 1839.

*Geoaccia* BERTONI, Aves Nuevas del Paraguay, 1901, 79. (Type, *G. oryctera* Bertoni=*Myiothera umbretta* Lichtenstein.)

Medium sized Furnariidae (length about 150–160 mm.) with long slender bill (as long as or longer than head), tail much shorter than wing, with rectrices broad and rounded terminally and with very rigid but not protruded shafts; hallux much longer than inner toe, the latter conspicuously shorter than outer toe, middle toe united to outer toe for whole of first and part of second phalanx, and plain brownish coloration.

Bill about as long as head, or longer, slender, straight or slightly decurved, its width at loral antiae equal to or greater than its depth at same point and equal to a little less than one-fourth to nearly one-third the distance from nostril to tip of maxilla; culmen distinctly ridged, straight basally, gradually decurved terminally, or straight for most of its length and terminal portion rather abruptly decurved; maxillary tomium nearly straight to decidedly concave, minutely but distinctly notched subterminally; mandibular tomium more or less convex, at least terminally, without trace of notch; gonys faintly convex basally, faintly concave terminally (the tip of mandible slightly but distinctly decurved in *S. mexicanus*). Nostril exposed, posteriorly in contact with loral feathering, broadly oval, horizontal, margined above by narrow membrane, a conspicuous internal tubercle or septum occupying nearly the posterior half. Rictal bristles absent, and feathers of chin, etc., without distinct (if any) terminal setae. Wing rather large and pointed, the longest primaries considerably longer than secondaries; eighth, or sixth, seventh, and eighth, primaries longest, the tenth (outermost) two-thirds to three-fourths as long as the longest, the ninth equal to or longer (sometimes much longer) than secondaries. Tail between two-thirds and three-fourths as long as wing, strongly rounded, the rectrices (12) broad, rounded terminally, with very rigid shafts, which are denuded but not protruded terminally. Tarsus shorter than culmen, about one-fourth as long as wing, scutellate anteriorly (sometimes indistinctly so), the planta fused (nonscutellate); middle toe, with claw, a little longer than tarsus; outer toe, without claw,

<sup>a</sup> οξὺς *acutus*, πυγῇ *cauda*. (Ménétriés.)

reaching to beyond middle of subterminal phalanx of middle toe, the inner toe conspicuously shorter, reaching (without claw) only to subterminal articulation of middle toe; hallux longer than inner but shorter than outer toe; claws moderate in size and curvature to rather large and strongly curved, much compressed, that of the hallux shorter than the digit.

*Coloration*.—Plain brownish, the rump and upper tail-coverts usually more rufescent, sometimes bright or deep chestnut; under parts paler than upper, the throat sometimes gray or whitish or squamated. Sexes alike.

*Nidification*.—Nest (of *S. umbretta*) composed of leaf-ribs placed in a rounded chamber at the end of a gallery in the ground. Eggs white.<sup>a</sup>

*Range*.—Southern Mexico to Cayenne, Argentina, and Peru. (About twelve species.)

#### KEY TO THE SPECIES AND SUBSPECIES OF *SCLERURUS*.

- a. Lower rump and upper tail-coverts chestnut, distinctly different from color of back.
- b. Chin and throat whitish or grayish, distinctly different from color of chest.
- c. Chin and throat dull white or grayish white, the feathers margined or tipped with dusky. (Southern Brazil.).....*Sclerurus umbretta* (extralimital).<sup>b</sup>
- cc. Chin dull white deepening into gray on throat, the feathers without distinct, if any, darker margin or tip.
- d. Back, etc., brown; chest tawny brown or dull rusty. (*Sclerurus albigularis*.)
- e. Back, etc., olive-brown; chest tawny brown; throat grayish white, deepening into pale gray on lower portion. (Venezuela; Tobago.)  
*Sclerurus albigularis albigularis* (extralimital).<sup>c</sup>
- ee. Back, etc., burnt-umber brown; chest dull rusty; throat smoke gray. (Northeastern Colombia.)  
*Sclerurus albigularis propinquus* (extralimital).<sup>d</sup>

<sup>a</sup> Goeldi, Ibis, 1896, 305.

<sup>b</sup> *M[ythothera] umbretta* Lichtenstein, Verz. Doubl., 1823, 43 (Bahia, Brazil).—*Myioturdus umbretta* Ménériés, Mem. de l'Acad. St. Petersb., ser. 6, Sci. Nat., i, 1835, 468 (Bahia).—*F[ormicarius] umbretta* Gray, Gen. Birds, i, 1840, 211.—*Sclerurus umbretta* Sclater and Salvin, Proc. Zool. Soc. Lond., 1867, 574 (lower Amazon Valley); Burmeister, Syst. Ueb. Th. Bras., iii, 1856, 45; Ridgway, Proc. U. S. Nat. Mus., xii, 1890, 22 (monogr.); Sclater, Cat. Birds Brit. Mus., xv, 1890, 114.—*Sclerurus caudatus umbretta* Hellmayr, Novit. Zool., xiv, 1907, 56 (crit.).—*Oxypyga scansor* Ménériés, Mém. de l'Acad. St. Petersb., ser. 6, Sci. Nat., i, 1835, 520, pl. 11 (Rio de Janeiro, Brazil).—*T[inactor] fuscus* Maximilian, Beitr. Naturg. Bras., iii, 1831, 1106, part (female only).

<sup>c</sup> *Sclerurus albigularis* "Sw[ainson] Braz. B. t. 78" Bonaparte, Consp. Av., i, 1850, 210 (nomen nudum); Sclater and Salvin, Proc. Zool. Soc. Lond., 1868, (pub. April, 1869), 630 (Venezuela; diagnosis); Sclater, Cat. Birds Brit. Mus., xv, 1890, 114, part (excl. syn. *S. canigularis*).—*Sclerurus albogularis* Ridgway, Proc. U. S. Nat. Mus., xii, 1889 (1890), 24 (monogr.; Venezuela; Tobago).

<sup>d</sup> *Sclerurus albigularis propinquus* Bangs, Proc. Biol. Soc. Wash., xiii, Nov. 11, 1899, 99 (Chirua, Santa Marta, Colombia, 7,000 ft.; coll. E. A. and O. Bangs).

*dd.* Back., etc., deep chestnut-brown or vandyke brown; chest clear chestnut.

(Costa Rica and western Panamá). . . . . *Sclerurus canigularis* (p. 166).

*bb.* Chin and throat bright russet or rufous-tawny, like chest. (*Sclerurus mexicanus*.)

*c.* Coloration lighter, the back, etc., warm-sepia brown, the lower rump and upper tail-coverts chestnut. (Southeastern Mexico to Amazon Valley.)

*Sclerurus mexicanus mexicanus* (p. 166).

*cc.* Coloration darker, the back, etc., dark sepia brown, the lower rump and upper tail-coverts deep vandyke to deep chocolate or walnut brown. (Caribbean slope of western Panamá and eastern Costa Rica.)

*Sclerurus mexicanus pullus* (p. 168).

*aa.* Lower rump and upper tail-coverts similar in color to back or but slightly more rufescent.

*b.* Chin and throat tawny or russet, like chest. (Guiana and lower Amazon Valley.)

*Sclerurus caudacutus* (extralimital).<sup>a</sup>

*bb.* Chin and upper throat with basal portion of feathers whitish or very pale brownish, the tip or terminal margin dark brown or dusky.

*c.* General color umber or sepia brown.

*d.* Throat brown, with basal portion of feathers dull brownish white or very pale brownish. (Upper Amazon Valley.)

*Sclerurus fuscus* (extralimital).<sup>b</sup>

*dd.* Chin and upper throat white, the feathers tipped or margined with brown or dusky.

*e.* Chest without spots or distinct streaks of tawny, and general coloration lighter brown.

*f.* General color deep chocolate brown; smaller (wing 83.8–86.4, tail 53.3–58.4). (Colombia). . . . . *Sclerurus brunneus* (extralimital).<sup>c</sup>

*ff.* General color vandyke brown, more olive-brown on under parts, the sides of head and neck and upper chest brownish tawny; larger (wing 100.3, tail 78.7). (Southeastern Brazil.)

*Sclerurus lawrencei* (extralimital).<sup>d</sup>

*ee.* Chest with distinct streaks or spots of tawny, and general color much darker brown. (Southern Mexico to Panamá; western Ecuador?).

*Sclerurus guatemalensis* (p. 169).

*cc.* General color olivaceous. (Western Peru.)

*Sclerurus olivascens* (extralimital).<sup>e</sup>

<sup>a</sup> *Thamnophilus caudacutus* Vieillot, Nouv. Dict. d'Hist. Nat., iii, 1816, 310 (Cayenne).—[*Sclerurus*] *caudacutus* Bonaparte, Consp. Av., i, 1850, 210.—*Sclerurus caudacutus* Sclater and Salvin, Proc. Zool. Soc. Lond., 1867, 573 (Capim R., lower Amazon Valley); Ridgway, Proc. U. S. Nat. Mus., xii, 1889 (1890), 27 (monogr.); Sclater, Cat. Birds Brit. Mus., xv, 1890, 116.—*Sclerurus caudacutus caudacutus* Hellmayr, Novit. Zool., xiv, 1907, 56 (crit.).

<sup>b</sup> *T[inator] fuscus* Maximilian, Beitr. Naturg. Bras., iii, 1831, 1106, part (male; locality not stated; type now in coll. Am. Mus. Nat. Hist.).—*Sclerurus fuscus* Ridgway, Proc. U. S. Nat. Mus., xii, 1889, no. 762 (pub. Feb. 5, 1890), 28 (monogr.).

<sup>c</sup> *Sclerurus brunneus* Sclater, Proc. Zool. Soc. Lond., 1857, 17 (Bogotá, Colombia; coll. P. L. Sclater); Cat. Birds Brit. Mus., xv, 1890, 116; Ridgway, Proc. U. S. Nat. Mus., xii, 1889 (1890), 29 (monogr.).—*Sclerurus caudacutus brunneus* Hellmayr, Novit. Zool., xiv, 1907, 56, 58 (Teffé, Brazil; crit.; geog. range).

<sup>d</sup> *Sclerurus lawrencei* Ridgway, Proc. U. S. Nat. Mus., xii, 1889, no. 762 (pub. Feb. 5, 1890), 29 ("Bahia" [Brazil], but locality probably erroneous; coll. Am. Mus. Nat. Hist.).

<sup>e</sup> *Sclerurus olivascens* Cabanis, Journ. für Orn., Jan., 1873, 67 (Monterico, w. Peru); Ridgway, Proc. U. S. Nat. Mus., xii, 1889 (1890), 31 (monogr.).



**SCLERURUS CANIGULARIS** Ridgway.**GRAY-THROATED SCLERURUS.**

*Adults (sexes alike).*—Pileum deep to dark sepia (sometimes lighter and browner on forehead), the feathers sometimes indistinctly margined with dusky; back, scapulars, and wing-coverts plain deep warm-sepia or vandyke brown, passing into chestnut on rump and upper tail-coverts, the wing-coverts inclining to chestnut or margined with that color; tail dark seal brown basally, passing into brownish black terminally; remiges dark sepia brown, the primary coverts more dusky; chin and throat light mouse gray, deeper on lower throat, paler (sometimes inclining to dull white) on chin; chest (broadly) dark dull cinnamon-rufous or tawny-chestnut; rest of under parts dark grayish brown or brownish slate color, tinged or suffused with tawny-chestnut, the under tail-coverts inclining to chestnut, with concealed portion dusky; maxilla brownish black, passing into horn color terminally; mandible dull pale yellowish or whitish (in dried skins), dusky along tomia; legs and feet dusky horn color (in dried skins).

*Young.*—Similar to adults but general color of upper parts more castaneous (less strongly contrasted with chestnut of rump and upper tail-coverts) and color of chest duller (between mummy brown and vandyke).

*Adult male.*—Length (skins), 151–168 (158); wing, 86–93 (89.2); tail, 58.5–62.5 (60.4); culmen, 21.5–22.5 (22.4); tarsus, 22–22.5 (22.2); middle toe, 18–19.5 (18.6).<sup>a</sup>

*Adult female.*—Length (skins), 140–166 (155); wing, 85–89 (86.8); tail, 57–60.5 (58.6); culmen, 21.5–24 (22.2); tarsus, 21–22.5 (21.8); middle toe, 17.5–19 (18.6).<sup>a</sup>

Costa Rica (Turrialba; Cariblanco de Sarapiquí; Tenório; Buena Vista; Cerro Santa Maria) and western Panamá (Boquete).

*Sclerurus canigularis* RIDGWAY, Proc. U. S. Nat. Mus., xi, sig. 34, Sept. 20, 1889, 542 (Turrialba, Costa Rica; coll. U. S. Nat. Mus.); xii, 1890, 24 (monogr.); xvi, 1893, 613 (Buena Vista, Costa Rica; crit.).—ZELEDÓN, Anal. Mus. Nac. Costa Rica, i, 1887, 114.—SCLATER, Ibis, 1889, 354 (crit.).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1891, 166.—BANGS, Proc. New Engl. Zool. Club, iii, 1902, 45 (Boquete, Panamá, 5,600–5,800 ft.).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 645 (Costa Rica; crit.).

[*Sclerurus*] *canigularis* SHARPE, Hand-list, iii, 1901, 72.

*Sclerurus albigularis* (not *S. albobularis* Swainson) SCLATER, Cat. Birds Brit. Mus., xv, 1890, 114, part (in synonymy).

**SCLERURUS MEXICANUS MEXICANUS** Sclater.**MEXICAN SCLERURUS.**

*Adults (sexes alike).*—Above plain deep warm-sepia brown (sometimes approaching prouts or vandyke brown), duller and rather

<sup>a</sup> Six specimens.

darker on pileum, and passing into chestnut on lower rump and upper tail-coverts; tail darker sepia brown, passing into blackish brown terminally; chin and throat dull tawny-rufous or rufous-tawny (the chin sometimes decidedly paler, rarely dull whitish), passing into deeper tawny-rufous or tawny-chestnut on chest; rest of under parts plain brown (nearest mummy brown), sometimes tinged with more rufescent brown, especially on breast and under tail-coverts; under wing-coverts mixed tawny and grayish brown; maxilla dusky horn color or blackish, mandible pale yellowish or dull whitish (in dried skins), dusky or horn colored terminally and along tomia; iris hazel;<sup>a</sup> legs and feet horn color or dusky (in dried skins).

*Young*.—Similar to adults, but colors rather duller, especially on throat and chest, which are dull tawny or tawny-brown, some of the feathers with very indistinct shaft-streaks of paler and (sometimes) with narrow and indistinct terminal margins of duller brown or dusky.

*Adult male*.—Length (skins), 142–163 (154); wing, 78–83 (80.5); tail, 51–62 (56.2); culmen, 23–27 (24.7); tarsus, 20–22 (21.2); middle toe, 16–17.5 (17).<sup>b</sup>

*Adult female*.—Length (skin), 158; wing, 80; tail, 56.5; culmen, 24; tarsus, 20.5; middle toe, 17.5.<sup>c</sup>

Southeastern Mexico, in States of Vera Cruz (Córdova; Potrero, near Córdova; Jico; Jalapa; Orizaba), and Mexico (City of Mexico), Guatemala (Cobán; Raxché; Savana Grande; Volcán de Agua), Honduras (Volcán de Puca, Department of Copán), Costa Rica (Cariblanco de Sarapiquí), Panamá (Lion Hill; Panamá; Calovévora; Cordillera de Tolé; Santiago de Veragua) and southward through Colombia (Bogotá; Frontino) and Ecuador (Intaj; Sarayacu) to Peru (Yurimaguas; Chyavetas) and lower Amazon (Rio Capím).<sup>d</sup>

(?) "*Sclerurus ruficollis* SWAINSON, Birds Brazil, [“1834–41”], pl. 79.”

*Sclerurus mexicanus* SCLATER, Proc. Zool. Soc. Lond., 1856 (pub. Jan. 26, 1857), 290 (Córdova, Vera Cruz, Mexico; coll. P. L. Sclater); 1859, 365 (Jalapa, Vera Cruz); 1864, 175 (City of Mexico); Cat. Am. Birds, 1862, 145, pl. 12

<sup>a</sup> W. W. Brown, jr., on label.

<sup>b</sup> Seven specimens.

<sup>c</sup> One specimen.

| Locality.                                     | Wing. | Tail. | Culmen. | Tarsus. | Middle toe. |
|-----------------------------------------------|-------|-------|---------|---------|-------------|
| MALES.                                        |       |       |         |         |             |
| Two adult males from Vera Cruz, Mexico.....   | 80.2  | 58.5  | 26      | 20.7    | 16.7        |
| One adult male from Honduras.....             | 83    | 62    | 27      | 21      | 17.5        |
| Four adult males from Panamá (Lion Hill)..... | 80    | 53.6  | 23.2    | 21.5    | 17          |

<sup>d</sup> South American specimens not seen by me.

- (Córdova; Cobán, Guatemala); Cat. Birds Brit. Mus., xv, 1890, 115 (Córdova; Raxché, Cobán, Savana Grande, and Volcán de Agua, Guatemala; Calovévora, Cordillera de Tolé, and Santiago de Veragua, Panamá; Bogotá and Fróntino, Colombia; Intaj and Sarayacu, Ecuador; Yurimaguas, e. Peru; Capím R., lower Amazons; Bahía?).—SALVIN and SCLATER, Ibis, 1860, 35 (Cobán; crit.).—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1867, 574 (Capím R.; crit.), 750, 755 (Yurimaguas and Chyavetas, e. Peru); 1873, 269 (Yurimaguas, e. Peru).—SALVIN, Ibis, 1861, 143 (Raxché, Guatemala); Proc. Zool. Soc. Lond., 1867, 142 (Santiago and Cordillera de Tolé Panamá; crit.); 1870, 191 (Calovévora, Panamá).—SUMICHRIST, Mem. Bost. Soc. N. H., i, 1869, 555 (tierra caliente of Vera Cruz, up to 1300 m.); La Naturaleza, v, 1881, 247 (Orizaba and Protero, Vera Cruz).—SANCHEZ, Anal. Mus. Nac. Mex., i, 1877, 97 (Vera Cruz).—TACZANOWSKI, Orn. du Pérou, ii, 1884, 115 (Yurimaguas).—RIDGWAY, Proc. U. S. Nat. Mus., xii, 1890, 25 (monogr.); xiv, 1891, 471 (Volcán de Puca, Honduras).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1891, 167.—CARRIKER, Ann. Carnegie Mus., vi, 1910, 645 (Costa Rica).—CHAPMAN, Bull. Am. Mus. N. H., x, 1898, 32 (Jalapa).—BANGS, Proc. New Engl. Zool. Club, ii, 1900, 26 (Loma del León, Panamá).—GOELDI, Ibis, 1903, 499 (Capím R., n. e. Brazil).
- [*Sclerurus*] *mexicanus* GRAY, Hand-list, i, 1869, 167, no. 2219.—PELZELN, Orn. Bras., iv, Abth., 1870, 419.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 62.—SHARPE, Hand-list, iii, 1901, 72.
- (?) *Sclerurus rufigularis* PELZELN, Orn. Bras., ii Abth., 1869, 161 (Maribatanas; ex "*Tinactor rufigularis*, Natterer, Catal. msc.").<sup>a</sup>
- Sclerurus caudacutus* (not *Thamnophilus caudacutus* Vieillot) SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1879, 520 (Antioquia, Colombia).—TACZANOWSKI, Orn. du Pérou, ii, 1884, 114.

### SCLERURUS MEXICANUS PULLUS Bangs.

#### DUSKY SCLERURUS.

Similar to *S. m. mexicanus* but coloration much darker, the back, etc., dark sepia, the lower rump and upper tail-coverts deep vandyke to deep chocolate or walnut brown.

*Adult male*.—Length (skins), 146–160 (153); wing, 76.5–81 (78.7); tail, 56–57 (56.5); culmen, 21–24 (22.5); tarsus, 21–21.5 (21.2); middle toe, 18–19 (18.5).<sup>b</sup>

*Adult female*.—Length (skins), 146–156 (151); wing, 75–78 (76.5); tail, 50–54.5 (52.2); culmen, 20–21.5 (20.7); tarsus, 20–22 (21); middle toe, 18–19.5 (18.7).<sup>b</sup>

Caribbean slope of western Panamá (Boquete, Chiriquí) and Costa Rica (Cariblanco de Sarapiquí).

*Sclerurus mexicanus pullus* BANGS, Proc. New Engl. Zool. Club, iii, Jan. 30, 1902, 45 (Boquete, Chiriquí, Panama, 5,000 ft.; coll. E. A. and O. Bangs).

<sup>a</sup> Brown, the lower back rufescent, throat and upper neck ochraceous, breast washed with ferruginous, tail blackish. Length (dried skin), 6'', wing 3'' 1''', tail 2'' 3''', bill, to rictus, 11''', tarsus 9½'''. (Translation of original description.)

<sup>b</sup> Two specimens.



## SCLERURUS GUATEMALENSIS (Hartlaub).

## GUATEMALAN SCLERURUS.

*Adults (sexes alike).*—Above plain deep vandyke brown, the feathers of pileum very indistinctly margined with dusky; tail darker brown, passing into blackish brown terminally; chin and throat white, the feathers broadly margined with dusky (at least on lower throat), producing a squamate effect; rest of under parts bister or sepia brown, brighter, more tawny, brown on chest, where the feathers are paler centrally and have a narrow shaft-streak of light tawny; under wing-coverts pale brownish gray or grayish brown, narrowly margined with dusky; bill black or blackish brown, the basal portion dull whitish or yellowish (in dried skins); iris brown; legs and feet dusky horn color to brownish black (in dried skins).

*Young.*—Essentially like adults but chin and throat darker, streaked rather than squamated with dusky and with ground color pale brown or brownish gray instead of white, and color of chest less tawny (nearly mummy brown).

*Adult male.*—Length (skins), 150–181 (164); wing, 85.5–92 (88.7); tail, 57–66.5 (60.9); culmen, 21–25 (22.7); tarsus, 20.5–23 (22); middle toe, 17–19.5 (18.2).<sup>a</sup>

*Adult female.*—Length (skins), 148–165 (157); wing, 83–91 (86.9); tail, 54.5–59.5 (57.6); culmen, 21.5–23.5 (22.4); tarsus, 21–23 (21.9); middle toe, 18–19.5 (18.3).<sup>b</sup>

<sup>a</sup> Eighteen specimens.<sup>b</sup> Ten specimens.

| Locality.                                   | Wing. | Tail. | Culmen. | Tarsus. | Middle toe. |
|---------------------------------------------|-------|-------|---------|---------|-------------|
| MALES.                                      |       |       |         |         |             |
| One adult male from Tabasco, Mexico.....    | 87    | 57    | 21.5    | 22      | 18.5        |
| Three adult males from Honduras.....        | 89.7  | 61.5  | 23      | 21.8    | 18.7        |
| Two adult males from British Honduras.....  | 90.5  | 61.2  | 22      | 21.7    | 18.2        |
| One adult male from Nicaragua.....          | 90    | 61    | 22      | 20.5    | 18          |
| Ten adult males from Costa Rica.....        | 88.5  | 57.5  | 23      | 21.5    | 18          |
| One adult male from Panamá.....             | 85    | 57.5  | 23      | 21.5    | 18          |
| FEMALES.                                    |       |       |         |         |             |
| One adult female from Guatemala.....        | 86.5  | 58    | 22      | 21      | 18          |
| One adult female from Honduras.....         | 89.5  | 58.5  | 22.5    | 21.5    | 18.5        |
| One adult female from British Honduras..... | 91    | 59    | 23      | 22.5    | 19          |
| Five adult females from Costa Rica.....     | 86.9  | 57.1  | 22.7    | 22      | 18.5        |
| Two adult females from Panamá.....          | 84    | 57.5  | 21.7    | 22      | 18.2        |

Southeastern Mexico, in States of Vera Cruz (Jico), Tabasco (Teapa), and southward through Guatemala (Choctúm), British Honduras (Toledo District), Honduras (Santa Ana; La Puerta; Chaloma), Nicaragua (Rio Escondido; San Emilis, Lake Nicaragua), Costa Rica (Sibahue, Talamanca; Jiménez; La Concepción; Bonilla; El Hogár; El General; Pozo Azul de Pirrís; Pozo del Rio Grande; El Pozo de Térraba; Boruca; Paso Real, Boruca; La Vijagua; Palmár; Volcán de Miravalles; Cerro Santa Maria), and Panamá (Lion Hill; Panamá; Boquete).

*Tinactor guatemalensis* HARTLAUB, Rev. Zool., 1844, 370 (Guatemala).

*Sclerurus guatemalensis* SCLATER and SALVIN, Ibis, 1859, 118 (Guatemala); Proc. Zool. Soc. Lond., 1864, 354 (Lion Hill, Panamá; crit.).—SALVIN, Ibis, 1861, 352 (Choctúm, Guatemala).—ZELEDÓN, Anal. Mus. Nac. Costa Rica, i, 1887, 114 (Jiménez and Pozo Azul de Pirrís, Costa Rica; Panama).—RIDGWAY, Proc. U. S. Nat. Mus., xii, 1890, 30 (monogr.); xiv, 1891, 471 (Santa Ana and La Puerta, Honduras).—SCLATER, Cat. Birds Brit. Mus., xv, 1890, 117, part (Choctúm, Guatemala; Panamá; not spec. c, which=*S. brunneus* Sclater).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1891, 168, pl. 44, fig. 1.—RICHMOND, Proc. U. S. Nat. Mus., xvi, 1893, 498 (Rio Escondido, Nicaragua).—CHERRIE, Expl. Zool. Merid. Costa Rica, 1893, 38 (Palmár and Boruca, s. w. Costa Rica).—UNDERWOOD, Ibis, 1896, 440 (Volcán Miravalles, Costa Rica).—LANTZ, Trans. Kansas Acad. Sci. for 1896-97 (1899), 221 (Chaloma, Honduras).—BANGS, Proc. New Engl. Zool. Club, ii, 1900, 26 (Loma del León, Panamá); Auk, xxiv, 1907, 299 (Boruca, Paso Real, and Pozo del Rio Grande, s. w. Costa Rica).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 646 (Costa Rica; crit.).

*S[sclerurus] guatemalensis* BONAPARTE, Consp. Av., i, 1850, 210.

[*Sclerurus*] *guatemalensis* GRAY, Hand-list, i, 1869, 167, no. 2221.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 62.—SHARPE, Hand-list, iii, 1901, 73.

*Scleurus guatemalensis* LAWRENCE, Ann. Lyc. N. Y., vii, 1863, 482 (Isthmus Panamá).

*Scleurus caudacutus* (not *Thamnophilus caudacutus* Vieillot) LAWRENCE, Ann. Lyc. N. Y. vii, 1862, 320 (Lion Hill, Panamá).

*Scleurus mexicanus*? (not *Sclerurus mexicanus* Sclater) LAWRENCE, Ann. Lyc. N. Y., vii, 1862, 465 (Lion Hill).

#### Genus XENOPS Illiger.

*Xenops* ILLIGER, Prodr. Orn., 1811, 213. (Type, *X. genibarbis* Illiger.)

*Neops* <sup>a</sup> VIEILLOT, Analyse, 1816, 45. (Type, *N. ruficaudus* Vieillot=*Xenops genibarbis* Illiger.)

*Ancorhamphus* <sup>b</sup> BILLBERG, Synop. Faunæ Scand., i, pt. ii, 1828, tab. A. (To replace *Xenops* Illiger.)

Small scansorial Furnariidæ (length about 115 mm.) with short, stout, wedge-shaped bill with strongly recurved, falcate mandible; tail (black and cinnamon-rufous) shorter than wing, with round-

<sup>a</sup> νέος, novus; ὤψ, vultus. (Vieillot.)

<sup>b</sup> ἀνῆλκω, I reach up to; ῥάμφος, beak. (Oberholser.)

tipped rectrices, and inner webs of remiges crossed by a broad oblique band of light tawny or ochraceous-buff.

Bill decidedly shorter than head, stout, wedge-shaped, compressed, its width at loral antiae much less than its depth at same point and equal to a little less than half to one-third the distance from nostril to tip of maxilla; culmen scarcely ridged, straight to extreme tip; maxillary tomium slightly convex, without trace of notch; mandibular tomium distinctly concave for terminal half, without trace of notch; gonys distinctly convex, strongly ascending terminally, the mandible strongly recurved terminally (falcate) with tip acute. Nostril exposed, posteriorly in contact with loral feathering, very small, longitudinally ovate or elliptical, slightly operculate. Rictal bristles absent. Wing moderate, rather pointed, the longest primaries exceeding secondaries by length of culmen, or more; seventh and eighth primaries longest, the tenth (outermost) about four-fifths as long as longest and decidedly longer than secondaries. Tail a little more than two-thirds to four-fifths as long as wing, strongly rounded or moderately graduated (graduation not greater than length of tarsus), the rectrices (12) soft and rounded terminally. Tarsus as long as or slightly longer than culmen, one-fourth as long as wing or slightly less, distinctly scutellate; middle toe, with claw, about as long as tarsus; outer toe, without claw, reaching to middle of subterminal phalanx of middle toe, the inner toe slightly but decidedly shorter; hallux as long as outer toe, decidedly stouter; middle toe united to outer toe by all of its first and half or more of its second phalanx, to inner toe by whole of its first phalanx; claws large, strongly curved, acute, that of the hallux much shorter than the digit.

*Coloration*.—Plain brown or rufescent above, the head darker, sometimes streaked; tail cinnamon-rufous with much black on third and fourth, or second, third, and fourth rectrices; primaries blackish and dull cinnamon-rufous; inner webs of remiges crossed obliquely by a broad band of pale tawny or ochraceous; under parts light olive, whitish on throat, the chest, etc., sometimes streaked with whitish. Sexes alike.

*Range*.—Southern Mexico to Cayenne, Brazil, Bolivia, and Peru. (About five species.) <sup>a</sup>

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<sup>a</sup> The following I have not seen: *X. littoralis* Sclater; *X. tenuirostris* Pelzeln.



KEY TO THE SPECIES OF XENOPS.<sup>a</sup>

- a. Breast plain brown, brownish gray, or grayish olive. (*Xenops genibarbis*).  
 b. Basal portion of rectrices more extensively black. (Tropical South America.)  
     *Xenops genibarbis genibarbis* (extralimital).<sup>b</sup>  
 bb. Basal portion of rectrices less extensively black. (Southern Mexico to Panama.)  
     *Xenops genibarbis mexicanus* <sup>c</sup> (p. 172.)  
 aa. Breast conspicuously streaked with whitish. (*Xenops rutilus*).  
 b. Under parts more broadly streaked; back, etc., brighter rufous-brown. (Brazil, etc.)  
     *Xenops rutilus rutilus* (extralimital).<sup>d</sup>  
 bb. Under parts more narrowly streaked; back, etc., duller rufous-brown. (Costa Rica to Colombia, Venezuela, Trinidad, and Peru.)  
     *Xenops rutilus heterurus* (p. 175).

## XENOPS GENIBARBIS MEXICANUS (Sclater).

## MEXICAN XENOPS.

Similar to *X. g. genibarbis* <sup>e</sup> but with much less of black on basal portion of lateral rectrices.

*Adults (sexes alike)*.—Pileum brown (nearly bister), the feathers sometimes with very indistinct shaft-streaks of paler (these usually

<sup>a</sup> Both species of *Xenops* almost certainly require further subdivision than is here made, but from want of sufficient material, especially of *X. rutilus* and South American representatives of *X. genibarbis*, I must leave a satisfactory treatment of the genus to some one who has both more material and time. (See, however, Hellmayr, in Novit. Zool., xiv, 1907, 54, 55, whose paper I did not, unfortunately, see in time to utilize it in this work.)

<sup>b</sup> *Xenops genibarbis* Illiger, Prodrornus Orn., 1811, 213 (Cametà, Brazil); Sclater, Cat. Birds Brit. Mus., xv, 1890, 110.—*Neops ruficaudus* Vieillot, Analyse, 1816, 68 (Guiana).—(?)*Xenops littoralis* Sclater, Proc. Zool. Soc. Lond., 1861, 379 (Esmeraldas, w. Ecuador; coll. P. L. Sclater).—(?)*Xenops approximaus* Pelzeln, Sitz. Akad. Wien, xxxiv, 1859, 113.

In the paper referred to above Hellmayr (than whom there is no better authority), divides *X. genibarbis* into three subspecies (besides *X. g. mexicanus*), as follows: (1) *Xenops genibarbis genibarbis* (Colombia to Cayenne and Amazon Valley); (2) *Xenops genibarbis littoralis* (western Ecuador); (3) *Xenops genibarbis pelzelni* (southeastern Brazil, from Bahia to S. Paulo; new subspecies, described on p. 55, the type, in coll. Vienna Mus., being from Ypanema, S. Paulo).

<sup>c</sup> This probably separable into about three subspecies. (See p. 174, footnote.)

<sup>d</sup> *X[enops] rutilus* Lichtenstein, Verz. Doubl., 1823, 17 (Bahia, Brazil; coll. Berlin Mus.); Sclater, Cat. Birds Brit. Mus., xv, 1890, 111, part.—*Xenops rutilus rutilus* Hellmayr, Novit. Zool., xiii, 1906, 29 (Trinidad; crit.); xv, 1908, 62 (Goiaz, etc., Brazil; crit.).—*Xenops rutilans* Temminck, Pl. Col., livr., 12, July, 1821, pl. 72, fig. 2.—*Xenops affinis* Swainson, Anim. in Menag., pt. iii, Jan. 1, 1838, 352 (Brazil; coll. W. Swainson).—*Xenops argyobronchus* Bertoni, Aves Nuevas del Paraguay, Jan., 1901, 75 (Djaguarasapá, lat. 26° 53', upper Rio Paraná, Paraguay; coll. A. de W. Bertoni; see Arribáizaga, An. Mus. Nac. Buenos Aires, vii, 1902, 352, 358 and Ihering, Rev. Mus. Paulista, vi, 1904, 328).

<sup>e</sup> See p. 172.

obsolete); hindneck, back, scapulars, and lesser wing-coverts plain cinnamon-brown or between russet and raw-umber; lower rump, upper tail-coverts, and greater part of tail clear cinnamon-rufous; fourth and fifth rectrices (from outside), greater part of inner web of third rectrix, and basal portion of inner web of second, black, the inner web of outermost rectrix usually with a dusky spot at extreme base; wing-coverts russet-brown, the inner webs of greater coverts dusky; primary coverts dull black or dusky at base (narrowly) and tip (broadly), the middle portion (broadly) russet-brown; secondaries dull cinnamon-rufous with a large subterminal area of black (mostly concealed in the closed wing), the basal portion of inner web (extensively) ochraceous-buff; proximal (shorter) primaries dull black, tipped (more or less broadly and distinctly) with cinnamon-brown, crossed obliquely on the middle portion by a broad band of clear cinnamon-rufous; distal (longer) primaries dusky, their inner webs with a broad median area of ochraceous-buff, except on two or three outermost quills, the outer webs of which are mostly light russet-brown; a narrow supra-auricular streak of brownish buff; loreal region mostly dark brownish; malar, suborbital, and auricular regions dark brown (much like pileum), narrowly and indistinctly streaked with paler; a conspicuous subauricular streak of white; chin and throat pale brownish buffy (sometimes nearly buffy white on chin), the throat indistinctly flammulated with pale buffy brown, at least on lower portion; rest of under parts plain light brown (varying from buffy hair brown to isabella color), tinged, more or less strongly, with pale russet-brown posteriorly; under wing-coverts ochraceous-buff; maxilla dusky, the lower-basal portion paler; mandible pale horn color or dull whitish (in dried skins) becoming darker on upper or terminal portions; iris brown; legs and feet dark horn color (in dried skins).

*Young*.—Similar in coloration to adults but dusky on basal portion of inner webs of lateral rectrices more extensive and texture of plumage different.

*Adult male*.—Length (skins), 108–125 (117); wing, 58.5–67.5 (64.2); tail, 43.5–53 (48.9); culmen, 12–14.5 (13.1); tarsus, 14–15.5 (14.7); middle toe, 11.5–13 (12).<sup>a</sup>

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<sup>a</sup> Twenty-four specimens.

*Adult female*.—Length (skins), 104–120 (113); wing, 58–66 (61.2); tail, 43.5–48 (46); culmen, 11–14 (13.1); tarsus, 14–15 (14.1); middle toe, 11–13 (11.9).<sup>a</sup>

Southeastern Mexico, in States of Vera Cruz (Córdova; Playa Vicente; Uvero; Buena Vista), Oaxaca, Tabasco (Teapa), and Yucatan (La Vega), and southward through Guatemala (Choctúm; sources of Rio de la Pasión), British Honduras (Orange Walk; Cayo; Toledo District; near Manatee Lagoon), Honduras (San Pedro; Montañas; Santa Ana; Rio Blanco; Rio Segóvia), Nicaragua (Castillo; Rio San Juan; San Emilis, Lake Nicaragua) and Costa Rica (Grécia; Angostura; San José; Tucurriquí; Guápiles; Carrillo; Corallillo; Guayabál; Orosí; El Hogár; Guayabo; Jiménez; Pozo Azul de Pirris; Pozo del Pitál; Pozo del Rio Grande; Lagarto; Boruca; Paso Real; El General; Tenório; Buenos Aires; El Pozo de Terraba; Pigres; Pacuare; Palmár; Bebedero; Cerro Santa Maria; Miravalles; La Vijagua; Bolsón), to Panamá (Santa Fé de Veragua; Calovévora; Bugaba; Bibalaz; Volcan de Chiriquí; Boquete; Divala; Panamá; Lion Hill).

*Xenops mexicanus* SCLATER, Proc. Zool. Soc. Lond., 1856 (pub. Jan. 26, 1857), 289 (Córdova, Vera Cruz, Mexico; coll. A. Sallé); 1859, 382 (Playa Vicente, Vera Cruz); Cat. Am. Birds, 1862, 159 (Oaxaca).—SALVIN, Ibis, 1861, 353

<sup>a</sup> Eighteen specimens.

| Locality.                                                               | Wing. | Tail. | Culmen. | Tarsus. | Middle toe. |
|-------------------------------------------------------------------------|-------|-------|---------|---------|-------------|
| MALES.                                                                  |       |       |         |         |             |
| Two adult males from Vera Cruz, Mexico.....                             | 64    | 50    | 13      | 14.5    | 12.5        |
| Three adult males from British Honduras.....                            | 63.5  | 48.5  | 13.2    | 14.8    | 12          |
| Five adult males from Honduras.....                                     | 63.1  | 47.2  | 13.3    | 14.5    | 11.8        |
| Ten adult males from Nicaragua (1) and Costa Rica (9).....              | 65.2  | 49.6  | 13.3    | 14.9    | 12.1        |
| Two adult males from western Panamá (Divala, Chiriquí).....             | 66.2  | 52.2  | 13.5    | 14.7    | 12.2        |
| Two adult males from eastern Panamá (line of railway).....              | 60.7  | 45.5  | 12.7    | 14.5    | 12          |
| One adult male ( <i>X. g. genibarbis</i> ) from Surinám.....            | 67    | 52.5  | 15      | 14.5    | 12          |
| One adult male ( <i>X. g. genibarbis</i> ) from Brazil (Maribatanas)... | 63.5  | 41.5  | 14      | 15      | 11.5        |
| FEMALES.                                                                |       |       |         |         |             |
| One adult female from Vera Cruz.....                                    | 61    | 46    | 13      | 14.5    | 12          |
| One adult female from Yucatan.....                                      | 62    | 46    | 13.5    | 14      | 11.5        |
| Two adult females from British Honduras.....                            | 60    | 46    | 12.7    | 14      | 11.2        |
| One adult female from Honduras.....                                     | 60    | 46    | 13      | 14      | 11.5        |
| Ten adult females from Costa Rica.....                                  | 61.6  | 45.7  | 13      | 14.5    | 12.2        |
| Two adult females from western Panamá.....                              | 62.5  | 47    | 13.7    | 14.5    | 11.7        |
| One adult female from eastern Panamá.....                               | 58    | 46.5  | 12.5    | 14      | 12          |

Specimens from British Honduras are more buffy (less olivaceous) below and more rufescent above than those from Costa Rica, etc., the latter being much more olivaceous (less brownish) below as well as above, than those from Mexico. Those from the Santa Marta district of Colombia are paler above, with middle rectrices cinnamonaceous rather than rufescent, the under parts paler and grayer, wing shorter, and tail longer. The species almost certainly requires further subdivision.



- (Choctúm, Guatemala); Proc. Zool. Soc. Lond., 1867, 143 (Santa Fe de Verágua); 1870, 192 (Calovévora and Bugabá, Panamá).—LAWRENCE, Ann. Lyc. N. Y., vii, 1862, 320 (Lion Hill, Panamá); ix, 1868, 106 (Angostura, San José, Pacuare, and Grécia, Costa Rica).—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1864, 354 (Lion Hill; crit.).—FRANTZIUS, Journ. für Orn., 1869, 304 (Costa Rica).—SUMICHRAST, Mem. Bost. Soc. N. H., i, 1869, 555 (hot region Vera Cruz); La Naturaleza, v, 1881, 247 (Uvero, Vera Cruz).—SANCHEZ, Anal. Mus. Nac. Mexico, i, 1877, 97 (Vera Cruz).—BOUCARD, Ann. Soc. Linn. Lyons, 1878, 37 (Guatemala).
- [*Xenops*] *mexicanus* GRAY, Hand-list, i, 1869, 174, no. 2356.
- X[*enops*] *genibarbis mexicanus* BERLEPSCH and STOLZMANN, Proc. Zool. Soc. Lond., 1896, 375, in text.—HELLMAYR, Novit. Zool., xiv, 1907, 55 (crit.).
- Xenops genibarbis mexicanus* CARRIKER, Ann. Carnegie Mus., vi, 1910, 643 (Costa Rica).
- Xenops genibarbis* (not of Illiger), ZELEDÓN, Anal. Mus. Nac. Costa Rica, i, 1887, 113 (Jiménez, Angostura, and Pozo Azul de Pirrís, Costa Rica).—RIDGWAY, Proc. U. S. Nat. Mus., x, 1888, 590 (Rio Segóvia, Honduras).—SCLATER, Cat. Birds Brit. Mus., xv, 1890, 110, part (Córdova, Vera Cruz; Oaxaca; sources Rio de la Pasión, and Choctúm, Guatemala; Tucurríqui and San José, Costa Rica; Santa Fé, Calovévora, and Bugaba, Verágua; Panamá).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1891, 164, part (Teapa, Tabasco; Orange Walk and Cayo, Brit. Honduras; Angostura, Pacuare, and Grécia, Costa Rica; Bibaláz, Verágua; etc.).—RICHMOND, Proc. U. S. Nat. Mus., xvi, 1893, 497 (Castillo, Nicaragua).—CHERRIE, Expl. Zool. Merid. Costa Rica, 1893, 39 (Palmár, Boruca, etc., Costa Rica); Anal. Inst. Fis.-Geog., vi, 1893, 17 (Pozo del Pitál, Costa Rica).—UNDERWOOD, Ibis, 1896, 440 (Volcán Miravalles and Bebedero, Costa Rica).—BANGS, Proc. New Engl. Zool. Club, ii, 1900, 26 (Loma del León, Panamá); iii, 1902, 45 (Volcán de Chiriquí, 6,200 ft.).—FERRY, Pub. 146, Field Mus. N. H., orn. ser., i, no. 6, 1910, 270 (Guayabo, Costa Rica).
- [*Xenops*] *genibarbis* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 66, part.—SHARPE, Hand-list, iii, 1901, 71, part (s. Mexico to Panamá).

### XENOPS RUTILUS HETERURUS (Cabanis and Heine).

#### STREAKED XENOPS.

*Adults (sexes alike).*—Pileum dark sepia or sooty brown streaked with pale brownish buff or cinnamon; hindneck and back dull cinnamon-brown (or between russet and raw-umber) the former broadly streaked with cinnamon-buff, the upper back sometimes with narrower and indistinct streaks of the same; rump, upper tail-coverts, and tail clear deep cinnamon-rufous, the inner web of third and fourth rectrices (from outside) mostly black, that of second dusky basally; wing-coverts nearly concolor with back, the middle and greater series with terminal portion paler and more cinnamonaceous or tawny; secondaries dull cinnamon-rufous with a large subterminal area of black (concealed in the closed wing), the basal portion (extensively) of inner web clear ochraceous-buff; proximal (shorter) primaries black, tipped with dull cinnamon-rufous and crossed by a broad subbasal area of the same (lighter, more ochraceous-buff, on inner webs); distal (longer) primaries, except three outermost, similar

but with cinnamon-rufous area confined to inner web; three outermost primaries with inner web wholly dusky, the outer web mostly dull cinnamon-rufous; a narrow but conspicuous superciliary streak of buffy white, indistinct anteriorly; lores mostly dull grayish or dusky; a broad postocular streak of brownish black or dark sooty brown; auricular region dusky, streaked with pale brownish buff or whitish, and bordered below by a conspicuous subauricular streak of white; chin and throat dull white or yellowish white, the lower throat sometimes streaked, more or less, with olive; rest of under parts light grayish brown (hair brown to light isabella color), passing into a more rufescent or cinnamonaceous hue posteriorly, streaked with dull white, the streaks broadest on chest; under wing-coverts deep ochraceous-buff; maxilla dusky horn color, paler on lower-basal portion; mandible dull pale yellowish or whitish (in dried skins), passing into dusky or horn color terminally; iris dark brown; legs and feet dusky horn color (dark bluish gray in life).

*Male*.—Length (skins) 112–121 (115); wing, 63–71.5 (67.6); tail, 43.5–50 (47.9); culmen, 12–13 (12.6); tarsus, 14.5; middle toe, 13–14 (13.3).<sup>a</sup>

Costa Rica (Juan Viñas; Guayabo) and Panamá (Boquete, 4,500–5,000 ft.; Volcán de Chiriquí), and southward through Colombia (San Antonio, Rio Cali; Rio Chiquitos; Rio Lima; Bogotá; Cauta; Medellín, Antioquía; Los Tambos; Santa Elena and Las Nubes, Santa Marta) and Ecuador (Guayaquil; Machây; Balzár Mountains; Sarayacu; Baeza; Vines) to Peru (Chamicuros; Ropaybamba; Anquimarca; Tambillo; Guajango; Chirimoto; Coccocho; Huambo; Nauta; Rio Ucayali; La Gloria; Borgoña; Garita del Sol; Idma; Santa Ana).<sup>b</sup>

*Xenops rutilans* (not of Temminck) SCLATER, Proc. Zool. Soc. Lond., 1856, 27 (Bogotá, Colombia; crit.).

*Xenops rutilus* (not of Lichtenstein) WYATT, Ibis, 1871, 331 (Cauta, Colombia).—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1873, 270 (Chamicuros, e. Peru;

<sup>a</sup> Four specimens.

| Locality.                                                                          | Wing. | Tail. | Culmen. | Tarsus. | Middle toe. |
|------------------------------------------------------------------------------------|-------|-------|---------|---------|-------------|
| MALES.                                                                             |       |       |         |         |             |
| Two adult males from western Panamá (Boquete, Chiriquí)...                         | 65.5  | 46.7  | 12.7    | 14.5    | 13          |
| Two adult males from northwestern Colombia (Rio Cali and Rio Limón).....           | 69.7  | 49    | 12.5    | 14.5    | 13.7        |
| Eight adult males ( <i>X. r. rutilus</i> ) from southwestern Brazil (Chapada)..... | 66.2  | 47.8  | 12.5    | 14      | 13.4        |
| FEMALES.                                                                           |       |       |         |         |             |
| One adult female from Trinidad.....                                                | 63    | 43    | 12      | 14      | 13          |
| Four adult females ( <i>X. r. rutilus</i> ) from Brazil (3 from Chapada).          | 65.2  | 46.1  | 12.2    | 14      | 13          |

<sup>b</sup> I have not seen specimens from Ecuador or Peru.

- habits).—TACZANOWSKI, Proc. Zool. Soc. Lond., 1874, 529 (Ropaybamba and Anquimarca, centr. Peru); 1879, 231 (Tambillo and Guajango, Peru); 1882, 26 (Chirimoto, Coccocho, and Huambo, Peru); Orn. du Pérou, ii, 1884, 160.—BERLEPSCH and TACZANOWSKI, Proc. Zool. Soc. Lond., 1883, 562 (Guayaquil, w. Ecuador; crit.).—BERLEPSCH, Journ. für Orn., 1884, 318 (Cauta, Colombia).—TACZANOWSKI and BERLEPSCH, Proc. Zool. Soc. Lond., 1885, 97 (Macháy, Ecuador; crit.).—SCLATER, Cat. Birds Brit. Mus., xv, 1890, 111, part (Costa Rica; Volcan de Chiriquí, Panamá; Medellín, Santa Elena, and Bogotá, Colombia; Balzár Mountains and Sarayacu, Ecuador; Nauta and Tambillo, Peru).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1891, 165, part (Volcan de Chiriquí, Colombia).—ALLEN, Bull. Am. Mus. N. H., xiii, 1900, 159 (Las Nubes, Santa Marta, Colombia).—GOODFELLOW, Ibis, 1902, 61 (Baeza, e. Ecuador).—FERRY, Pub. 146, Field Mus. N. H., orn. ser. i, no. 6, 1910, 270 (Guayabo, Costa Rica).
- [*Xenops*] *rutilus* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 66, part.—SHARPE, Hand-list, iii, 1901, 71, part (Costa Rica; Panamá; Colombia; Peru).
- X[enops]* *heterurus* CABANIS and HEINE, Mus. Hein., ii, Aug., 1859, 33 (Colombia; coll. Heine Mus.).
- Xenops heterurus* SCLATER, Cat. Am. Birds, 1862, 159 (Bogotá).—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1866, 566 (Rio Ucayali, e. Peru).—SALVIN, Ibis, 1869, 319 (Costa Rica); Proc. Zool. Soc. Lond., 1870, 192 (Volcan de Chiriquí; crit.).—SALVADORI and FESTA, Boll. Mus. Zool., etc., Torino, xv, 1899, no. 362, 23 (Vinces, w. Ecuador; crit.; synonymy).
- [*Xenops*] *heterurus* SHARPE, Hand-list, iii, 1901, 71 (Ecuador; Peru).
- Xenops rutilus heterurus* BERLEPSCH and STOLZMANN, Proc. Zool. Soc. Lond., 1896, 375 (La Gloria, Borgoña, and Garita del Sol, centr. Peru); Ornis, 1906, 92 (Idma, Santa Ana, Peru).—BERLEPSCH, Novit. Zool., xv, 1908, 147 (Cayenne; crit.).

### Genus MARGARORNIS Reichenbach.

- Margarornis* REICHENBACH, Handb. Spec. Orn., 1853, 119. (Type, *Anabates squamigera* Lafresnaye and D'Orbigny.)
- Anabasitta* LAFRESNAYE, Rev. et Mag. de Zool., Nov., 1853, 492. (Type, *Anabates squamigera* Lafresnaye and D'Orbigny.)

Small scansorial Furnariidæ (length about 130–150 mm.) with small bill (much shorter than head), long spine-tipped tail, very long hallux, middle toe united to outer toe by whole of its first phalanx (sometimes a small part of its second phalanx also), and color of upper parts (except, sometimes, pileum and hindneck) uniform bright cinnamon-rufous.

Bill very much shorter than head, rather slender, moderately compressed, its width at loreal antiæ about equal to its depth at same point and equal to about half the distance from nostril to tip of maxilla; culmen rather sharply ridged, gradually but decidedly decurved from base; maxillary tomium nearly straight or slightly decurved (concave) terminally, without trace of subterminal notch; mandibular tomium slightly but decidedly decurved (convex) terminally, without trace of notch; gonys nearly straight, scarcely if at all ascending terminally, not prominent basally. Nostril exposed, posteriorly in contact with loreal feathering, narrow, longitudinal,



distinctly operculate. Rictal bristles absent, and feathers of chin, etc., without terminal setæ. Wing long and pointed, the longer primaries exceeding secondaries by much more than length of exposed culmen; sixth, seventh, and eighth primaries longest, the tenth (outermost) two-thirds to nearly three-fourths as long as the longest, the ninth much longer than secondaries. Tail nearly as long as wing, graduated for more than one-fourth its length, the rectrices (12) abruptly and excessively acuminate terminally, with slender tip conspicuously protruded. Tarsus very much longer than culmen, at least one-fourth (but less than one-third) as long as wing, distinctly scutellate; middle toe, with claw, as long as tarsus; outer toe, without claw, reaching to much beyond middle of subterminal phalanx of middle toe, the inner toe decidedly shorter; hallux as long as outer toe; middle toe united to outer toe by the whole of its first and part of its second phalanx, to inner toe for greater part of its first phalanx; claws rather large, strongly curved, sharp, that of the hallux decidedly shorter than the digit.

*Coloration*.—Upper parts (except, sometimes, pileum and hind-neck) uniform bright cinnamon-rufous or chestnut-rufous; under parts similar but paler, with whitish throat and spots or streaks on lower throat or chest, or else under parts of body with conspicuous guttate spots of buffy white margined with black. Sexes alike.

*Range*.—Costa Rica to Venezuela, Bolivia, and Ecuador. (Four species.<sup>a</sup>)

#### MARGARORNIS RUBIGINOSA Lawrence.

##### COSTA RICAN MARGARORNIS.

*Adults (sexes alike)*.—Pileum plain chestnut-brown, usually paler and more buffy brown on forehead and passing into buffy brown or raw-umber on hindneck; rest of upper parts, including wings and tail, plain deep cinnamon-rufous or rufous-chestnut, the outer webs of two or three outermost primaries and most of inner webs of all the remiges (except tertials) deep grayish brown; a superciliary stripe of buff, indistinct or obsolete above lores; auricular, suborbital, and malar regions plain wood brown or tawny-olive; chin and throat dull white or yellowish white; rest of under parts light buffy cinnamon medially deepening into rufous-cinnamon laterally and on under tail-coverts, the feathers of median portion of chest (sometimes of breast also) with more or less distinct small spots of pale buff, these usually margined posteriorly by a very narrow line of black, the extreme upper chest with ground color paler, and, together with extreme lower throat usually with more or less distinct narrow bars of grayish or dusky; under wing-coverts pale buffy, mottled or tinged with light cinnamon-brownish, and sometimes more or less

<sup>a</sup> I have not seen *M. squamigera* (D'Orbigny and Lafresnaye), from Bolivia.

barred with dusky; inner webs of remiges (except two or three outer primaries) edged with light ochraceous-buff and with a broad sub-basal area of the same extending entirely across the web; maxilla light brownish, mandible paler; iris brown; legs and feet light brownish (in dried skins).

*Adult male*.—Length (skins), 131–159 (149); wing, 71–81.5 (76.9); tail, 69.5–81 (75.5); culmen, 11–13 (12.5); tarsus, 19–20.5 (19.8); middle toe, 14–16 (15.2).<sup>a</sup>

*Adult female*.—Length (skins), 141–155 (149); wing, 71–79.5 (74.8); tail, 66–80 (73.2); culmen, 11–13 (12.1); tarsus, 19–20 (19.6); middle toe, 14–15.5 (14.8).<sup>b</sup>

Highlands of Costa Rica (Burgos and El Roble, Volcán de Irazú; Quebrada Honda; San José; La Palma de San José; Volcán de Turrialba; Coliblanco; La Estrella de Cartago; Cachí, Cartago; Navarro de Cartago; Carrillo; La Hondura; San Mateo; Los Reyes, Las Vueltas, and Laguária, Santa Maria de Dota; Laguna Tapada de Birris; Ojuras de Térraba) and western Panamá (Boquete, 5,000–6,000 ft.; Volcán de Chiriquí, 7,500–11,000 ft.; Lomo Cheno, 7,000 ft.; Calobre).

*Margarornis rubiginosa* LAWRENCE, Ann. Lyc. Nat. Hist. N. Y., viii, 1867, 128 (San José, Costa Rica; coll. U. S. Nat. Mus.); ix, 1868, 106 (San José and San Mateo, Costa Rica).—FRANTZIUS, Journ. für Orn., 1869, 304 (Quebrada Honda, Costa Rica).—BOUCARD, Proc. Zool. Soc. Lond., 1878, 60 (Navarro, Costa Rica).—ZELEDÓN, Anal. Mus. Nac. Costa Rica, i, 1887, 113 (San Mateo, Costa Rica).—SCLATER, Cat. Birds Brit. Mus., xv, 1890, 122 (San José and Irazú distr., Costa Rica; Calobre, Panamá).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1891, 170, pl. 47, fig. 1.—BANGS, Proc. New Engl. Zool. Club, iii, 1902, 46 (Boquete and Volcán de Chiriquí, 5,000–11,000 ft., Panamá).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 646 (Costa Rica; habits).—FERRY, Pub. 146, Field Mus. N. H., orn. ser., i, no. 6, 1910, 270 (Coliblanco and Volcán de Turrialba, Costa Rica).

[*Margarornis*] *rubiginosa* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 67.—SHARPE, Hand-list, iii, 1901, 73.

[*Sittasomus*] *rubiginosus* GRAY, Hand-list, i, 1869, 180, no. 2475.

<sup>a</sup> Seventeen specimens.

<sup>b</sup> Thirteen specimens.

| Locality.                                               | Wing. | Tail. | Culmen. | Tarsus. | Middle toe. |
|---------------------------------------------------------|-------|-------|---------|---------|-------------|
| MALES.                                                  |       |       |         |         |             |
| Ten adult males from Costa Rica.....                    | 76.8  | 76    | 12.1    | 19.6    | 15.4        |
| Seven adult males from western Panamá (Chiriquí).....   | 77    | 74.7  | 13.1    | 20.1    | 15          |
| FEMALES.                                                |       |       |         |         |             |
| Ten adult females from Costa Rica.....                  | 75.4  | 74    | 11.8    | 19.6    | 14.8        |
| Three adult females from western Panamá (Chiriquí)..... | 74.8  | 73.2  | 12.1    | 19.6    | 14.8        |

## Genus PREMNOPLEX Cherrie.

*Premnoplex* <sup>a</sup> CHERRIE, Proc. U. S. Nat. Mus., xiv, no. 855, Sept. 4, 1891, 339.  
(Type, *Margarornis brunnescens* Lawrence.)

Small scansorial Furnariidæ (length about 135 mm.) with second phalanx of outer toe partly joined to middle toe, tarsus shorter than middle toe with claw, wing less than three and a half times as long as tarsus, exposed culmen as long as middle toe without claw, and inner webs of remiges without any buff or ochraceous area.

Bill nearly as long as head, slender, its width at loreal antiæ greater than its depth at same point and equal to decidedly less than half the distance from nostril to tip of maxilla; culmen distinctly ridged, slightly and gradually curved from near base, the tip of maxilla very slightly decurved, not uncinate; tomia nearly straight for terminal half or more but strongly deflected basally, without trace of subterminal notch; gonyes nearly straight, slightly prominent basally, slightly ascending terminally. Nostril exposed, posteriorly in contact with loreal feathering, very narrow (a horizontal slit), overhung by a broad, convex, membranous operculum. Rictal bristles absent, and feathers of chin, etc., without terminal setæ. Wing rather short, excessively rounded, the longest primaries exceeding secondaries by much less than length of exposed culmen; sixth, seventh, and eighth primaries longest, the tenth (outermost) about three-fifths as long as the longest, the ninth much longer than secondaries. Tail about as long as wing, graduated for more than half its length, the rectrices (12) abruptly acuminate, with slender but barbed points conspicuously protruded (but less developed on lateral than on middle rectrices). Tarsus longer than whole culmen, one-third as long as wing, distinctly scutellate; middle toe, with claw, longer than tarsus; outer toe, without claw, reaching to about middle of subterminal phalanx of middle toe, the inner toe distinctly shorter; hallux as long as outer toe, much stouter; basal phalanx of middle toe wholly united to outer toe, for more than half to inner toe; claws rather large and strongly curved, very acute, that of the hallux much shorter than the digit.

*Coloration*.—Above brown, the head darker and duller; throat buff or ochraceous; rest of under parts brown with broad guttate streaks of buff or ochraceous-buff; no buff or ochraceous on inner webs of remiges.

*Range*.—Costa Rica to Peru and Bolivia. (Two species? <sup>b</sup>)

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<sup>a</sup> From *πρέμνον*, trunk of tree, and *πλήσσα*, strike (erroneously *πηγσσω* in original).

<sup>b</sup> I have not seen *P. stictonota* (Berlepsch), from western Bolivia.



KEY TO THE SUBSPECIES OF *PREMNOPLEX BRUNNESCENS*.

- a. Throat more rufescent; general color darker, with black margins to feathers of under parts broader.
- b. Throat paler (ochraceous to tawny-ochraceous). (Central to northwestern Colombia.).....*Premnoplex brunescens brunescens* (extralimital.)<sup>a</sup>
- bb. Throat darker (deep tawny-ochraceous to rufous-tawny.) (Santa Marta district of Colombia.).....*Premnoplex brunescens coloratus* (extralimital.)<sup>b</sup>
- aa. Throat paler (buff to ochraceous-buff); general color paler, with black margin to feathers of under parts narrower. (Costa Rica and Panamá.)
- Premnoplex brunescens brunneicauda* (p. 181).

**PREMNOPLEX BRUNNESCENS BRUNNEICAUDA (Lawrence).****COSTA RICAN PREMNOPLEX.**

*Adults (sexes alike).*—Pileum olive or deep grayish olive, the feathers margined with dusky, those of the forehead with rather broad mesial streaks of buff; rest of upper parts mummy brown passing into vandyke brown on rump and upper tail-coverts, the scapulars and interscapulars indistinctly margined with dusky, the latter (especially on upper back) sometimes with narrow and mostly indistinct shaft-streaks of buff; tail darker or duller vandyke brown than rump, sometimes nearly seal brown; loreal, superciliary, and supra-auricular regions buff, the latter streaked with dusky; auricular and suborbital regions dusky or dark sooty brown, streaked (the latter spotted or flecked) with buffy; malar region, chin, and throat deep buff, the feathers of throat usually indistinctly margined with blackish; rest of under parts olive, conspicuously variegated with large spots and streaks of light buff and black or dusky margins to the feathers, the former largest on chest, where occupying all of each feather except a broad black margin, narrower, more streak-like on sides, more indistinct on abdomen and flanks, indistinct or obsolete on under tail-coverts; maxilla black, mandible dull whitish or yellowish (in dried skins) with a sharply defined stripe of blackish along tomia; iris brown; legs and feet dusky or horn color (in dried skins).

*Young.*—Similar to adults in coloration but under parts of body with margins to feathers rather broader and more blackish and mesial spots and streaks rather deeper buff.

<sup>a</sup> *Margarornis brunescens* Sclater, Proc. Zool. Soc. Lond., June 16, 1856, 27, pl. 116 (Bogotá, Colombia; coll. P. L. Sclater); Cat. Birds Brit. Mus., xv, 1890, 123, part.—*Premnoplex brunescens brunescens* Bangs, Proc. Biol. Soc. Wash., xxi, July 27, 1908, 159 (centr. and w. Colombia to Peru; crit.).

<sup>b</sup> *Premnoplex coloratus* Bangs, Proc. New Engl. Zool. Club, iii, Mar. 31, 1902, 84 (San Miguel, Santa Marta, Colombia, 7,500 ft.; coll. E. A. and O. Bangs).—*Premnoplex brunescens coloratus* Bangs, Proc. Biol. Soc. Wash., xxi, July 27, 1908, 159 (Sierra Nevada de Santa Marta; crit.).

*Adult male*.—Length (skins), 128–149 (137); wing, 59.5–70.5 (63.8); tail, 58.5–65 (61.6); culmen, 12–15.5 (13.9); tarsus, 18.5–20 (19.1); middle toe, 15–16 (15.7).<sup>a</sup>

*Adult female*.—Length (skins), 125–144 (133); wing, 57.5–65.5 (61.2); tail, 55.5–65 (59.3); culmen, 13–15.5 (14.3); tarsus, 18–19.5 (18.9); middle toe, 14.5–16 (15.5).<sup>b</sup>

Highlands of Costa Rica (San José; Rancho Redondo de San José; San Mateo; Río Súcio; Quebrada Honda; Birris, Azahár, and La Estrella, Cartago; La Hondura; Carrillo; Volcán de Irazú; Guayabo; Barranca; Coliblanco; Turrialba; Laguária; Santa Maria de Dota) and western Panamá (Cordillera de Tolé; Cordillera del Chucu; Volcán de Chiriquí, 7,000–7,700 ft.; Boquete; Chitra; Calobre; Calovévora).

*Margarornis brunnescens* (not of Sclater, 1856) SALVIN, Proc. Zool. Soc. Lond., 1867, 143 (Cordillera de Tolé, Verágua, Panamá; crit.); 1870, 192 (Chitra and Cordillera del Chucu, Verágua, Panamá; crit.).—LAWRENCE, Ann. Lyc. N. Y., ix, 1868, 106 (San José, Rancho Redondo, Barranca, San Mateo, and Birris, Costa Rica).—FRANTZIUS, Journ. für Orn., 1869, 304 (Costa Rica).—RIDGWAY, Proc. U. S. Nat. Mus., vi, 1884, 415 (Río Súcio, Costa Rica).—ZELEDÓN, Anal. Mus. Nac. Costa Rica, i, 1887, 113 (Turrialba, Costa Rica).—SCLATER, Cat. Birds Brit. Mus., xv, 1890, 123, part (Rancho Redondo, Costa Rica; Calovévora, Panamá).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1891, 170, pl. 47, fig. 2, part (San José, Quebrada Honda, Rancho Redondo, Barranca, San Mateo, Birris, and Río Súcio, Costa Rica; Chiriquí, Chitra, Tolé, Cordillera del Chucu, Calovévora, and Calobre, Panamá).

[*Margarornis*] *brunnescens* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 67, part. [*Sittasomus*] *brunnescens* GRAY, Hand-list, i, 1869, 180, no. 2476.

*Premnoplex brunnescens* BANGS, Proc. New Engl. Zool. Club, iii, 1902, 46 (Boquete and Volcan de Chiriquí, 4,000–7,700 ft., Panamá).—FERRY, Pub. 146, Field Mus. N. H., orn. ser., i, no. 6, 1910, 270 (Guayabo and Coliblanco, Costa Rica).

<sup>a</sup> Fourteen specimens.

<sup>b</sup> Seventeen specimens.

| Locality.                                                                                  | Wing. | Tail. | Culmen. | Tarsus. | Middle toe. |
|--------------------------------------------------------------------------------------------|-------|-------|---------|---------|-------------|
| MALES.                                                                                     |       |       |         |         |             |
| Ten adult males from Costa Rica.....                                                       | 63.1  | 61.5  | 13.6    | 19.1    | 15.7        |
| Four adult males from western Panamá (Chiriquí).....                                       | 65.6  | 61.8  | 15      | 19.1    | 15.7        |
| Three adult males ( <i>P. b. coloratus</i> ) from northeastern Colombia (Santa Marta)..... | 61.2  | 60.7  | 15.8    | 19.3    | 15.8        |
| FEMALES.                                                                                   |       |       |         |         |             |
| Ten adult females from Costa Rica.....                                                     | 60.8  | 59.3  | 14.2    | 18.9    | 15.7        |
| Seven adult females from western Panamá (Chiriquí).....                                    | 61.6  | 59.2  | 14.6    | 18.9    | 15.2        |
| One adult female ( <i>P. b. brunnescens</i> ) from northwestern Colombia.....              | 60    | 53    | 15      | 19.5    | 16          |
| Three adult females ( <i>P. b. coloratus</i> ) from northeastern Colombia.....             | 59.5  | 55.5  | 15.5    | 19.2    | 15.7        |

[*Premnoplex*] *brunnescens* SHARPE, Hand-list, iii, 1901, 74, part (Costa Rica; Panamá).

[*Margarornis*] *brunneicauda* LAWRENCE, Ann. Lyc. Nat. Hist. N. Y., viii, 1867, 130, in text (Costa Rica; coll. U. S. Nat. Mus.).

*Premnoplex brunnescens brunneicauda* BANGS, Proc. Biol. Soc. Wash., xxi, July 27, 1908, 159 (Costa Rica, Chiriquí and Verágua, Panamá; crit.).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 647 (highlands of Costa Rica, 2,000 ft. to timber-line; crit.).

### Genus *ACRORCHILUS* Ridgway.

*Acrorchilus* <sup>a</sup> RIDGWAY, Proc. Biol. Soc. Wash., xxii, April 17, 1909, 71. (Type *Synallaxis erythrops* Sclater.)

Small wrenlike Furnariidae (length about 130–140 mm.) with tail about as long as wing (sometimes longer), graduated, the rectrices (12) usually acuminate at tip; tarsus much less than one-third as long as wing; basal phalanx of middle toe not wholly united to outer toe, and tail and wings rufescent and plumage without streaks (except, sometimes, on pileum).

Bill much shorter than head, rather stout, slightly decurved, and moderately compressed, its width at loral antiae slightly greater than its depth at same point and equal to about one-third the distance from nostril to tip of maxilla; culmen distinctly ridged, gradually and rather strongly decurved from near base, the tip of maxilla not uncinate; maxillary tomium more or less distinctly concave, mandibular tomium similarly convex, both without trace of subterminal notch; gonys nearly to quite straight, not prominent basally. Nostril exposed, posteriorly in contact with loral feathering, narrow (a longitudinal slit), overhung by a broad, convex, membranous operculum. Rictal bristles absent, and feathers of chin, etc., without terminal setae. Wing rather large and pointed, the longest primaries exceeding secondaries by about distance from nostril to tip of maxilla; seventh and eighth, sixth, seventh, and eighth, or sixth and seventh primaries longest, the tenth (outermost) about two-thirds as long as the longest, the ninth longer than secondaries. Tail very nearly as long as wing to decidedly longer, graduated for nearly to more than half its length, the rectrices (12) usually abruptly attenuated terminally, sometimes with tips acute (but not denuded). Tarsus much longer than whole culmen, less than one-third as long as wing, stout, very distinctly scutellate; middle toe, with claw, decidedly shorter than tarsus; outer toe, without claw, not reaching to middle of subterminal phalanx of middle toe, the inner toe slightly shorter; hallux about as long as inner toe, but much stouter; basal phalanx of middle toe united for half or more (sometimes for nearly the whole) of its length to outer toe, for nearly as much to inner toe; claws mod-

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<sup>a</sup> ἄκρος, pointed; ὀρχίλος, wren.



erate to rather large, strongly curved, acute, that of the hallux decidedly shorter than the digit.

*Coloration*.—Wings and tail (usually pileum also) cinnamon-rufous rest of upper parts plain brown; under parts plain pale brownish gray, light grayish brown, or dull buffy. Sexes alike.

*Range*.—Costa Rica to Ecuador (at least).<sup>a</sup> (Many species.)<sup>a</sup>

KEY TO THE SPECIES OF *ACRORCHILUS*.

- a. Pileum, at least, rufous. (*Adults*.)
  - b. Loral, orbital, auricular, and malar regions rufous; crown without black streaks (*Acrorchilus erythroptus*.)
    - c. Middle pair of rectrices russet-brown. (Ecuador.)
      - Acrorchilus erythroptus erythroptus* (extralimital).<sup>b</sup>
    - cc. Middle pair of rectrices bright cinnamon-rufous, like rest of tail.
      - d. Rufous of head less extended, the occiput and nape brown, like back; chest and lower throat light buffy olive. (Costa Rica and Panamá.)
        - Acrorchilus erythroptus rufigenis*, adults (p. 185).
      - dd. Rufous of head more extended, involving occiput and nape; chest mouse gray fading into nearly ash gray on throat. (Northwestern Colombia.)
        - Acrorchilus erythroptus griseigularis* (extralimital).<sup>c</sup>
    - bb. Loral, orbital, auricular, and malar regions buffy brownish, the superciliary region narrowly streaked with whitish; forehead and crown streaked with black. (Colombia to Ecuador.).....*Acrorchilus antisimensis* (extralimital).<sup>d</sup>
  - aa. Pileum without rufous.....*Acrorchilus erythroptus rufigenis*, young (p. 185).

***ACRORCHILUS ERYTHROPTUS RUFIGENIS* (Lawrence).**

**LAWRENCE'S SPINETAIL.**

Similar to *A. e. erythroptus* Sclater,<sup>e</sup> of Ecuador, but middle pair of rectrices bright cinnamon-rufous (like other rectrices), instead of russet brown, cinnamon-rufous of head deeper and more extended (occupying whole of auricular and greater part of malar regions, as well as orbital, loral, superciliary, and supra-auricular regions as well as forehead and crown), general coloration darker, and size larger.

<sup>a</sup> On account of the very poor representation of species referred to the genus *Siptornis*, by Dr. Sclater and other recent authorities, in the material which I have been able to examine, I can not give a very definite statement of the number of species or extent of the geographic range of this genus, which is so exceedingly distinct, structurally, from *Siptornis* that it is difficult to imagine why the fact has not sooner been realized. The only species examined by me in this connection are the following: *A. erythroptus* (Sclater), *A. hellmayri* (Bangs), and *A. pallida* (Maximilian).

<sup>b</sup> *Synallaxis erythroptus* Sclater, Proc. Zool. Soc. Lond., pt. xxviii, pt. i, May, 1860, 66 (Pallatanga, w. Ecuador; coll. P. L. Sclater). *Siptornis erythroptus* Sclater, Cat. Birds Brit. Mus., xv, 1890, 60, part.—*A[crorchilus] erythroptus erythroptus* Ridgway, Proc. Biol. Soc. Wash., xxii, April 17, 1909, 72, in text.

<sup>c</sup> *Acrorchilus erythroptus griseigularis* Ridgway, Proc. Biol. Soc. Wash., xxii, April 17, 1909, 72 (San Antonio, Rio Cali, n. w. Colombia; coll. E. A. and O. Bangs).

<sup>d</sup> *Synallaxis antisimensis* Sclater, Proc. Zool. Soc. Lond., 1859, 457 (Cuenca, Ecuador; coll. P. L. Sclater).—*Siptornis antisimensis* Sclater, Cat. Birds Brit. Mus., xv, 1890, 59.

<sup>e</sup> See Key to the Species, this page.

Differing from *A. e. griseigularis* Ridgway <sup>a</sup> of northwestern Colombia in much less grayish underparts (especially throat and chest), darker coloration of upper parts, and larger size.

*Adults (sexes alike).*—Forehead and crown, together with entire loreal, orbital, superciliary, supra-auricular, and auricular regions and anterior half or more of malar region bright cinnamon-rufous, the supra-auricular region sometimes paler, forming a more or less distinct postocular streak; nape, hindneck, back, scapulars, rump, and upper tail-coverts plain olive-brown (between sepia and raw umber), the nape and hindneck sometimes duller; tail and wings cinnamon-rufous, this passing into brown on terminal portion of remiges and on tertials, the primary coverts tipped with more grayish brown; underparts light olive or buffy olive, passing into dull whitish on upper throat and chin, inclining to raw umber on flanks, the abdomen sometimes tinged with tawny; under wing-coverts deep ochraceous-buff, the inner webs of remiges broadly edged with deep pinkish buff; maxilla blackish brown, mandible pale brownish (in dried skins) darker terminally; legs and feet horn color (in dried skins).

*Young.*—Pileum and hindneck olive-brown, nearly concolor with back, etc.; sides of head similar, relieved by a more dusky broad streak occupying upper portion of auricular region and a paler superciliary or supra-auricular streak, the latter sometimes rufous-tawny, the lower portion of auricular region, suborbital region, and malar region also sometimes rufous-tawny or suffused with that color; coloration otherwise essentially as in adults, but underparts tinged with ochraceous, or sometimes with indistinct narrow bars of dusky.

*Adult male.*—Length (skins), 140–153 (146); wing, 64–72 (66.8); tail, 66.5–75.5 (71.5); culmen, 12–14.5 (13.4); tarsus, 18–19.5 (18.6); middle toe, 13–14.5 (13.7).<sup>b</sup>

*Adult female.*—Length (skins), 136–162 (146); wing, 62–69.5 (65.8); tail, 63–75 (70); culmen, 12.5–14 (13.4); tarsus, 18–19 (18.6); middle toe, 13–14.5 (13.6).<sup>c</sup>

<sup>a</sup> See p. 184.

<sup>b</sup> Nineteen specimens.

<sup>c</sup> Twelve specimens.

| Locality.                                                                | Wing. | Tail. | Culmen. | Tarsus. | Middle toe. |
|--------------------------------------------------------------------------|-------|-------|---------|---------|-------------|
| MALES.                                                                   |       |       |         |         |             |
| Ten adult males from Costa Rica.....                                     | 66.7  | 71.8  | 13.1    | 18.7    | 13.8        |
| Nine adult males from western Panamá (Chiriquí).....                     | 66.8  | 71.5  | 13.4    | 18.6    | 13.7        |
| One adult male ( <i>A. e. erythropis</i> ?) from northwestern Colombia.. | 65.7  | 62.7  | 13.2    | 18      | 14          |
| FEMALES.                                                                 |       |       |         |         |             |
| Eight adult females from Costa Rica.....                                 | 65.2  | 70.7  | 13.2    | 18.6    | 13.6        |
| Four adult females from western Panamá (Chiriquí).....                   | 66.9  | 68.7  | 13.8    | 18.6    | 13.6        |

Costa Rica (Navarro, Birris, Azahár, and La Estrella, Cartago; Volcán de Irazú; Escazú; Jiménez; Barranca; La Carpintera; Guayabo; La Hondura; Juan Viñas; Río Súcio; Copé; Dota; Dota Mts.; Santa Maria de Dota; Laguária) and western Panamá (Boquete; Volcan de Chiriquí, 7,500–10,300 ft.; Caribbean slope, Volcan de Chiriquí).

*Synallaxis erythrops* (not of Sclater, 1860) LAWRENCE, Ann. Lyc. N. Y., ix, 1868, 105 (Barranca, Dota Mts., and Birris, Costa Rica).—FRANTZIUS, Journ. für Orn., 1869, 304 (Costa Rica).—SALVIN, Proc. Zool. Soc. Lond., 1870, 191 (Volcan de Chiriquí, Panamá; crit.).—BOUCARD, Proc. Zool. Soc. Lond., 1878, 59 (Volcán de Irazú and Navarro, Costa Rica).—ZELEDÓN, Anal. Mus. Nac. Costa Rica, i, 1887, 113 (Río Súcio, Costa Rica).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1891, pl. 45, fig. 1.

[*Synallaxis*] *erythrops* GRAY, Hand-list, i, 1869, 168, no. 2237.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 64, part.

*Siptornis erythrops* SCLATER, Cat. Birds Brit. Mus., xv, 1890, 60, part (Irazú distr., Costa Rica; Volcán de Chiriquí, Panamá).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1891, 151, part (Barranca, Dota Mts., "Pirris," i. e., Birris, Irazú, and Navarro, Costa Rica; Volcan de Chiriquí, Panamá).—FERRY, Pub. 146, Field Mus. N. H., orn. ser., i, no. 6, 1910, 270 (Guayabo, Costa Rica).

[*Siptornis*] *erythrops* SHARPE, Hand-list, iii, 1901, 59, part (Costa Rica; Panamá).

*Synallaxis rufigenis* LAWRENCE, Ann. Lyc. Nat. Hist. N. Y., ix, April, 1868, 105 (Costa Rica; coll. G. N. Lawrence;=young).—FRANTZIUS, Journ. für Orn., 1869, 304 (Costa Rica).—SALVIN, Proc. Zool. Soc. Lond., 1870, 191 (Costa Rica).—SCLATER, Proc. Zool. Soc. Lond., 1874, 19 (monogr.; Costa Rica).

[*Synallaxis*] *rufigenis* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 64.

*Siptornis rufigenis* SCLATER, Cat. Birds Brit. Mus., xv, 1890, 60 (Costa Rica).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1891, 152, pl. 45, fig. 2.—BANGS, Proc. New Engl. Zool. Club, iii, 1902, 43 (Boquete and Volcán de Chiriquí, 4,000–7,500 ft., Panamá; crit.).

[*Siptornis*] *rufigenis* SHARPE, Hand-list, iii, 1901, 59.

*A[crorchilus] erythrops rufigenis* RIDGWAY, Proc. Biol. Soc. Wash., xxii, April 17, 1909, 72, in text.

*Acrorchilus erythrops rufigenis* CARRIKER, Ann. Carnegie Mus., vi, 1910, 636 (Costa Rica; crit.; habits).

### Genus SYNALLAXIS Vieillot.

*Synallaxis* VIEILLOT, Nouv. Dict. d'Hist. Nat., xxiv, 1818, 117 (diagnosis, but no type indicated); xxxii, 1819, 309. (Type, *S. ruficapilla* Vieillot.)

*Anabates* TEMMINCK, Man. d'Orn., i, 1820, p. lxxxii. (Type, "Rouge-queue de la Guiane Buffon=*Motacilla guianensis* Gmelin.)

*Parulus* SPIX, Av. Sp. Nov. Bras., i, 1824, 85. (Type, *P. ruficeps* Spix=*Synallaxis spixi* Sclater.)

(?) *Leptozyura* REICHENBACH, Handb. Spec. Orn., 1853, 170. (Type, *Certhia cinnamomea* Gmelin.)

*Melanopareia* REICHENBACH, Handb. Spec. Orn., 1853, 164. (Type, *Synallaxis maximiliani* D'Orbigny.)

(?) *Certhiaxis*<sup>a</sup> LESSON, Compl. Œuvres de Buffon (éd. Lévêque), xx, Apr., 1847, 287. (Type, *Certhia cinnamomea* Gmelin.)

<sup>a</sup> From *Certhia* (κέρβος, a creeper); +[*Synall*] *axis*.



*Barnesia*<sup>a</sup> BERTONI, Aves Nuevas del Paraguay, 1901, 77. (Type, *Synallaxis cururuvi* Bertoni=*S. ruficapilla* Vieillot.)

Small, wrenlike, long-tailed Furnariidæ (length about 130–150 mm.) with only 10 rectrices, and with tail not more than one and a half times as long as wing.

Bill much shorter than head, rather stout, moderately compressed, its width at loreal antæ about equal to its depth at same point and from one-third to one-half the distance from nostril to tip of maxilla; culmen gradually decurved from near base, the tip of maxilla not uncinatè; tomia slightly decurved terminally, without trace of subterminal notch; gonys nearly straight, ascending terminally, at base forming a slight angle with lower edge of mandibular rami. Nostril exposed, posteriorly in contact with loreal feathering, narrow (a longitudinal slit), overhung by a broad operculum. Rictal bristles wanting, and feathers of chin, etc., without terminal setæ. Wing rather short, very concave beneath, much rounded, the longer primaries exceeding secondaries by less (usually very much less) than length of exposed culmen; sixth and seventh, fifth, sixth, and seventh, or sixth, seventh, and eighth, primaries longest, the tenth (outermost) about two-thirds as long as the longest, the ninth shorter than secondaries (*S. pudica*, *S. erythrothorax*) or very much longer (*S. ruficapilla*, *S. albescens*). Tail decidedly longer than wing to nearly one and a half times as long, graduated for more than half its length, the rectrices (10) usually acuminate, sometimes with webs thin or semi-decomposed. Tarsus nearly to much more than twice as long as bill from nostril, nearly to quite three-fifths as long as wing, stout, distinctly scutellate; middle toe, with claw, very slightly to decidedly shorter than tarsus; outer toe, without claw, reaching to slightly beyond subterminal articulation of middle toe, the inner toe very slightly shorter; hallux about as long as inner toe, but much stouter; basal phalanx of middle toe united for a little more than basal half to outer toe, for slightly less to inner toe; claws moderate in size and curvature, acute, that of the hallux much shorter than the digit.

*Coloration*.—Color partly cinnamon-rufous, this either on pileum, wings, or tail, sometimes on all three, occasionally on chest; otherwise plain olive, brown, gray, or sooty, usually paler (sometimes partly whitish) on under parts; no streaks, spots, nor bars. Sexes alike.

*Nidification*.—Nest an extremely bulky retort-shaped structure composed outwardly of coarse sticks, built in bushes or low trees; eggs white, bluish-white, or pale bluish green.

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<sup>a</sup> Named for Carlos St. Barnes. (Bertoni.)

*Range*.—Southeastern Mexico to southeastern Brazil. (Many species.<sup>a</sup>)

KEY TO THE SPECIES AND SUBSPECIES OF SYNALLAXIS.

- a. Pileum partly rufous, or else chest rufous. (*Adults*.)
  - b. Pileum dull brown; chest cinnamon-rufous or chestnut-rufous. (Southeastern Mexico to Honduras).....*Synallaxis erythrothorax*, adults (p. 189).
  - bb. Pileum partly cinnamon-rufous or rufous-chestnut; chest grayish or white.
    - c. Greater wing-coverts and basal portion of primaries cinnamon-rufous or chestnut-rufous; chest slate-gray to blackish slate. (*Synallaxis pudica*.)
    - d. Paler, the back, etc., olive-brown, tail brown, chest dull slate color or slate-gray. (Eastern Panamá to western Ecuador.)
      - Synallaxis pudica pudica* (p. 191).
    - dd. Darker, the back, etc., dark sooty brown, tail blackish brown, chest dark slate to blackish slate. (Western Panamá to southern Honduras.)
      - Synallaxis pudica nigrifumosa*, adult (p. 192).
  - cc. Greater wing-coverts and basal portion of primaries light brown or broccoli brown; chest light gray to white. (*Synallaxis albescens*.)
    - d. Chest distinctly gray; brown of back, etc., darker.
      - e. Larger (wing averaging 54 or more in male, more than 53 in female; tail averaging more than 69 in male, more than 66 in female).
      - f. Slightly paler and smaller (wing averaging 54 in male, 55 in female; tail 69.7 in male, 73.5 in female). (Margarita Island, Venezuela.)
        - Synallaxis albescens nesiotis* (extralimital).<sup>b</sup>
      - ff. Slightly darker and larger (wing averaging 56 in male, 54.7 in female; tail averaging 73 in male, 70.4 in female). (Colombia to Cayenne and Amazon Valley.)
        - Synallaxis albescens albigularis* (extralimital).<sup>c</sup>
    - ee. Smaller (wing averaging 52.2 in male, 49.9 in female; tail averaging 65.8 in male, 62.9 in female). (Southwestern Costa Rica and western Panamá).....*Synallaxis albescens latitabunda* (p. 194).

<sup>a</sup> In Sharpe's Hand-List of the Genera and Species of Birds, Vol. III, pp. 53-58 (1901), forty-nine species are referred to this genus. Of these I have examined about one-half, but the above generic diagnosis and description are based on the three Central American species and *S. ruficapilla* (type of the genus) alone. I am nearly convinced that the group requires subdivision, but it should not be attempted with so poor a representation of the species, and I therefore leave the problem for others to work out.

<sup>b</sup> *Synallaxis albescens nesiotis* Clark (A. H.), Auk, xix, July, 1902, 264 (Margarita Island, Venezuela; coll. E. A. and O. Bangs).

<sup>c</sup> *Synallaxis albigularis* Sclater, Proc. Zool. Soc. Lond., 1858, 63 (eastern Ecuador; coll. Verreaux).—*Synallaxis albescens albigularis* Berlepsch and Hartert, Novit. Zool., ix, April, 1902, 59 (Caicarà, Altagràcia, and Suapuré, Venezuela; descr. nest and eggs).—*Synallaxis albescens* (not of Temminck) Sclater, Cat. Birds Brit. Mus., xv, 1890, 43, part.

I am not able to examine a specimen of *S. albescens albescens* during preparation of this key; indeed, the material available is, for all the forms, exceedingly scanty and unsatisfactory. The synonymy of *S. a. albescens* is as follows: *Synallaxis albescens* Temminck, Pl. Col., iii, livr. 38, Sept., 1823, pl. 227, fig. 2 (Brazil; coll. Mus. Pays-Bas); Sclater, Cat. Birds Brit. Mus., xv, 1890, 43, part.—*Synallaxis albescens albescens* Hellmayr, Novit. Zool., xv, 1908, 59 (crit.).

*dd.* Chest white medially, shading into pale gray laterally; brown of back, etc., lighter, more buffy. (Eastern Panamá.)

*Synallaxis albescens hypoleuca* (p. 195).

*aa.* Pileum without any rufous (uniform dark brown); chest not rufous. (*Young.*)

*b.* Chest brown.....*Synallaxis erythrorhax*, young (p. 189).

*bb.* Chest dull slate-grayish or olive-slaty.

*Synallaxis pudica nigrifumosa*, young (p. 192).

## SYNALLAXIS ERYTHROTHORAX Sclater.

### RUFOS-BREADED SYNALLAXIS.

*Adults (sexes alike).*—Above plain sepia or bister brown, the pileum and hindneck usually somewhat duller (approaching grayish brown in worn plumage); tail more chestnut brown, the shafts of rectrices black; wings chestnut, passing into brown on terminal portion of remiges and on tertials; sides of head and neck similar in color to pileum and hindneck; chin and upper throat blackish slate or slate-black, streaked (more or less broadly) with white, the lower throat uniform blackish slate or slate-black, or with feathers tipped with slate color; chest, upper breast, sides of breast, and under wing-coverts uniform chestnut-rufous or deep cinnamon-rufous, passing into light brown (nearly raw-umber) on flanks; abdomen and median portion of lower breast transversely mottled or barred with whitish and mouse gray, more or less suffused with olive; under tail-coverts similar in color to flanks but rather paler and grayer; bill black, the mandible sometimes brownish or horn colored basally; legs and feet dusky horn color (in dried skins).

*Young.*—Upper parts as in adults, but chestnut of wings broken by brown tips to middle and greater wing-coverts; chin and upper throat transversely mottled or barred with grayish white and dull slate color, the lower throat nearly uniform dull slate color; chest, upper breast, sides, flanks, and under tail-coverts light brown (between isabella color and raw umber), the abdomen and median portion of lower breast pale grayish transversely mottled or barred with brown; basal half or more of mandible light colored.

*Adult male.*—Length (skins), 132–157 (146); wing, 53.5–61.5 (57); tail, 58–70.5 (65.7); culmen, 12.5–14.5 (13.8); tarsus, 19–21 (20.4); middle toe, 13.5–16 (14.9).<sup>a</sup>

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<sup>a</sup> Eighteen specimens.



*Adult female*.—Length (skins), 144–157 (148); wing, 53–58.5 (56.3); tail, 62–67 (65.1); culmen, 13.5–14.5 (13.9); tarsus, 19.5–21 (20.3); middle toe, 14.5–15 (14.9).<sup>a</sup>

Southeastern Mexico, in States of Vera Cruz (Playa Vicente; Córdoba; Potrero, near Córdoba; Orizaba; Uvero; Omealca; Atoyác; Sochiapa; Buena Vista; Pasa Nueva; Talcotalpám; Motzorongo; Jaltipán), Oaxaca (Túxtepec), Tabasco (Frontera; Teapa); Chiapas (Palenque; Huehuetán; Yojalón) and Yucatan (Chichen-Itza) and southward through Guatemala (Cobán; Choctúm; Chiséc; Kamkhál; Yzabál; Retalhuleu; Naranjo; Los Amates, Yzabál; Patulúl, Sololá; San José) and British Honduras (Belize; Orange Walk; Cayo; Sittee River; Toledo District; near Manatee Lagoon) to Honduras (San Pedro; San Pedro Sula).

*Synallaxis erythrorhax* SCLATER, Proc. Zool. Soc. Lond., June 26, 1855, 75, pl. 86 (Cobán, Guatemala; coll. Derby Mus.); 1856, 288 (Córdoba, Vera Cruz); 1859, 192, 382 (Playa Vicente; Vera Cruz); 1874, 17 (monogr.; Mexico; Guatemala; Honduras); Cat. Am. Birds, 1862, 153 (Honduras; Choctúm, Guatemala); Ibis, 1873, 373; Cat. Birds Brit. Mus., xv, 1890, 55 (Orizaba, Vera Cruz; n. Yucatan; Choctúm, Kamkhál, Chiséc, and Retalhuleu, Guatemala; Belize, Brit. Honduras; Honduras).—SCLATER and SALVIN, Ibis, 1859, 117 (Cobán, Guatemala; Córdoba, Vera Cruz); Proc. Zool. Soc. Lond., 1870, 837 (San Pedro, Honduras).—SALVIN and SCLATER, Ibis, 1860, 35 (Yzabál, Guatemala).—SUMICHRIST, Mem. Bost. Soc. N. H., i, 1869, 555 (tierra caliente of Vera Cruz); La Naturaleza, v, 1881, 247 (Uvero and Omealca, Vera Cruz).—SANCHEZ, Anal. Mus. Nac. Mex., i, 1877, 97 (Vera Cruz).—BOUCARD, Proc. Zool. Soc. Lond., 1883, 449 (e. Yucatan; descr. nest).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1891, 150 (Atoyác and Sochiapa, Vera Cruz; Teapa, Tabasco; Orange Walk and Cayo, Brit. Honduras; etc.).—COLE, Bull. Mus. Comp. Zool., i, 1906, 131 (Chichen-Itza, Yucatan).—DEARBORN, Pub. 125, Field Mus. N. H., 1907, 107 (Los Amates, Patulúl, and San José, Guatemala; habits; crit.).

<sup>a</sup> Thirteen specimens.

| Locality.                                    | Wing. | Tail. | Culmen. | Tarsus. | Middle toe. |
|----------------------------------------------|-------|-------|---------|---------|-------------|
| MALES.                                       |       |       |         |         |             |
| Ten adult males from Vera Cruz, Mexico.....  | 56.3  | 67    | 13.6    | 20.5    | 15.1        |
| One adult male from Guatemala.....           | 53.5  | 58    | -----   | 19      | 13.5        |
| Three adult males from British Honduras..... | 57    | 63.7  | 14      | 19.8    | 14.8        |
| Four adult males from Honduras.....          | 59.5  | 66    | 14.2    | 20.7    | 15          |
| FEMALES.                                     |       |       |         |         |             |
| Seven adult females from Vera Cruz.....      | 56.6  | 65.9  | 14.1    | 20.4    | 14.9        |
| Two adult females from Tabasco.....          | 58.2  | 64.7  | 14.2    | 20.5    | 15          |
| One adult female from Guatemala.....         | 53    | 65    | 14      | -----   | -----       |
| Three adult females from Honduras.....       | 55.3  | 63.5  | 13.7    | 19.8    | 14.8        |

*Synallaxis erythrorhax* SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1859, 192 (s. Mexico; Guatemala).

[*Synallaxis erythrorhax* GRAY, Hand-list, i, 1869, 168, no. 2228.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 63.—SHARPE, Hand-list, iii, 1901, 57.

*Synallaxis erythrorhax* BOUCARD, Ann. Soc. Linn. Lyons, 1878, 37 (Guatemala).

*Synallaxis cinerascens* (not of Temminck) BONAPARTE, Proc. Zool. Soc. Lond., 1837, 118 (Guatemala).

### SYNALLAXIS PUDICA PUDICA Sclater.

#### SLATY SYNALLAXIS.

*Adults (sexes alike).*—Forehead, sides of head (including loreal, superciliary, auricular, suborbital and malar regions) and sides of neck plain dull slate color or dark mouse gray, the first rather darker and slightly tinged with brownish; whole crown and occiput deep cinnamon-rufous or reddish chestnut; hindneck, back, scapulars, rump, and upper tail-coverts plain olive, grayer on hindneck, more strongly olive posteriorly; tail olive-brown or warm-sepia, the shafts of rectrices black; wings bright cinnamon-rufous or rufous-chestnut, the terminal portion of remiges (extensively) and whole of tertials deep olive-brown or sepia, the outermost primaries also mostly of this color; underparts mostly plain dull slate color or dark mouse gray, paler posteriorly, where strongly tinged with olive on flanks and under tail-coverts, the chin and upper throat narrowly streaked with white; in certain lights, a darker spot at junction of lower throat and chest; under wing-coverts light ochraceous-rufous, paler and duller on under primary-coverts; inner webs of remiges (except outermost primaries) broadly edged with vinaceous-cinnamon for basal half (approximately); maxilla blackish horn color, mandible light grayish horn color; iris brown; legs and feet dark horn color (in dried skins). Length (skins), 148–164 (155); wing, 55–60 (57.8); tail, 67.5–75 (71); culmen, 14.5–16 (15.2); tarsus, 20.5–22 (21.2); middle toe, 15–16.5 (15.9).<sup>a</sup>

*Adult female.*—Length (skins), 151; wing, 55–55.5 (55.2); tail, 65–67 (66); culmen, 14–15 (14.5); tarsus, 21; middle toe, 15–15.5 (15.2).<sup>b</sup>

Eastern Panamá (Lion Hill; Panamá) and southward through Colombia (Bogotá; Remédios, Antioquía) to Ecuador (Babahoyo; Nanegál; Esmeraldas; Chimbo; Cayandeléd; Yaguachi; Paramba; Foreste del Rio Peripa).<sup>c</sup>

<sup>a</sup> Five specimens, from Panamá.

<sup>b</sup> Two specimens, from Panamá.

<sup>c</sup> The birds of this species from western Ecuador may be different from true *S. pudica* of Colombia, but I am unable to compare specimens.

(?) *Synallaxis brachyura* LAFRESNAYE, Rev. Zool., 1843, 290 (Colombia; types now in coll. Boston Soc. N. H.).—SCLATER, Proc. Zool. Soc. Lond., 1855, 141 (Bogotá, Colombia); 1874, 26 (Bogotá, Colombia; crit.).—SALVIN, Ibis, 1874, 322 (crit.).

*Synallaxis pudica* SCLATER, Proc. Zool. Soc. Lond., 1859, 191 (Bogotá, Colombia; coll. P. L. Sclater); 1860, 88 (Nanegal, w. Ecuador), 278 (Babahoyo, w. Ecuador; crit.), 294 (Esmeraldas, w. Ecuador; crit.); 1874, 10, part (monogr.); Cat. Am. Birds, 1862, 151 (Bogotá; Nanegal and Babahoyo, w. Ecuador); Cat. Birds Brit. Mus., xv, 1890, part.—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1864, 354 (Panamá; crit.); 1879, 521 (Remédios, Antioquia, Colombia; descr. eggs).—BERLEPSCH and TACZANOWSKI, Proc. Zool. Soc. Lond., 1883, 560 (Chimbo, w. Ecuador; crit.); 1884, 298 (Cayandeléd, w. Ecuador, 4,000 ft.).—TACZANOWSKI and BERLEPSCH, Proc. Zool. Soc. Lond., 1885, 94 (Yaguachi, Ecuador).—HARTERT, Novit. Zool., v, 1898, 490 (Chimbo and Paramba, n. w. Ecuador; crit.).—SALVADORI and FESTA, Boll. Mus. Zool., etc., Torino, xv, 1899, no. 362, 19 (Foreste del Rio Peripa, w. Ecuador).—BANGS, Proc. New Engl. Zool. Club, ii, 1900, 26 (Loma del León, Panamá).

*S[ynallaxis] pudica* SCLATER, Proc. Zool. Soc. Lond., 1859, 192 (Colombia).

[*Synallaxis*] *pudica* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 63, part.—SHARPE, Hand-list, iii, 1901, 55, part (Panamá; Colombia; Ecuador).

*Synallaxis brunneicaudalis* (not of Sclater) LAWRENCE, Ann. Lyc. N. Y., vii, 1862, 319 (Lion Hill, Panamá).

#### SYNALLAXIS PUDICA NIGRIFUMOSA (Lawrence).

##### SOOTY SYNALLAXIS.

Similar to *S. p. pudica* but coloration decidedly darker, the tail very dark sooty brown or brownish black, back, etc., deep sepia brown, slate color of anterior under parts decidedly darker, and rufous-chestnut of pileum and wings deeper.

*Young.*<sup>a</sup>—Above, including whole pileum, deep olive-brown, the wings, however, mostly rufescent but the color either duller or more tawny than in adults; tail dark sooty brown (as in adults); chin and upper throat dull yellowish white or pale yellowish gray, the lower throat dark yellowish gray or olive-gray; rest of under parts light olive or grayish olive, paling into pale yellowish gray on abdomen, and changing into olive-brown or brownish olive on sides, flanks, and under tail-coverts.

*Adult male.*—Length (skins), 135–158 (150); wing, 52.5–62 (56.4); tail, 61.5–72.5 (69.6); culmen, 14–15.5 (14.6); tarsus, 20–22 (20.9); middle toe, 15–16 (15.3).<sup>b</sup>

<sup>a</sup> I have not been able to examine the young of *S. p. pudica*.

<sup>b</sup> Fifteen specimens.



*Adult female*.—Length (skins), 130–155 (145); wing, 50.5–56.5 (54.1); tail, 63.5–74.5 (70.7); culmen, 13–15 (14.1); tarsus, 19.5–22 (20.7); middle toe, 14.5–16 (15.3).<sup>a</sup>

Southern Honduras (Rio Segóvia), Nicaragua (Greytown; Chontales; Los Sábalos; San Emilis, Lake Nicaragua) and Costa Rica (Naranjo de Cartago; San José; Pacuare; Siquirres; Jiménez; Boca Matina; Pejé; Guayabo; Bonilla; Guápiles; Carrillo; El Hogár; Buenos Aires; Lagarto; Pozo del Rio Grande; Boruca; Pozo Azúl de Pirris; El Pozo de Terraba; El General; Las Trojas); western Panamá (Chiriquí)?

*Synallaxis nigrifumosa* LAWRENCE, Ann. Lyc. Nat. Hist. N. Y., viii, 1867, 181 (Greytown, Nicaragua; coll. U.S.Nat. Mus.); ix, 1868, 105 ("Payna,"=Pacuare, Costa Rica).—SALVIN, Ibis, 1870, 110 (crit.).—FRANTZIUS, Journ. für Orn., 1869, 304 (Costa Rica).

[*Synallaxis*] *nigrifumosa* SALVIN, Proc. Zool. Soc. Lond., 1867, 143, in text (Greytown).

[*Synallaxis*] *nigrofumosa* GRAY, Hand-list, i, 1869, 169, no. 2266.

*Synallaxis pudica* (not of Sclater, 1859) SALVIN, Ibis, 1872, 213 (Nicaragua).—SCLATER, Ibis, 1873, 373 (Chontales, Nicaragua); Proc. Zool. Soc. Lond., 1874, 10, part (Chiriquí?; Costa Rica); Cat. Birds Brit. Mus., xv, 1890, 45, part (Chontales, Nicaragua; Pejé, Costa Rica; Chiriquí?).—BOUCARD, Proc. Zool. Soc. Lond., 1878, 59 (Naranjo de Cartago, Costa Rica).—NUTTING, Proc. U. S. Nat. Mus., vi, 1883, 404 (Los Sábalos, Nicaragua; habits; notes).—ZELEDÓN, Anal. Mus. Nac. Costa Rica, i, 1887, 113 (Las Trojas, Pozo Azúl de Pirris, Naranjo de Cartago, and Pacuare, Costa Rica).—RIDGWAY, Proc. U. S. Nat. Mus., x, 1888, 590 (Rio Segóvia, Honduras).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1891, 149, part, pl. 44, fig. 2.—RICHMOND, Proc. U. S. Nat. Mus., xvi, 1893, 496 (Rio Escondido, Nicaragua; habits; descr. nest, etc.).—FERRY, Pub. 146, Field Mus. N. H., orn. ser., i, no. 6, 1910, 270 (Guayabo, Costa Rica).—CHERRIE, Expl. Zool. Merid. Costa Rica, 1893, 38 (Lagarto and Buenos Aires, Costa Rica).—BANGS, Auk, xxiv, 1907, 299 (Boruca

<sup>a</sup> Fourteen specimens.

| Locality.                                                         | Wing. | Tail. | Culmen. | Tarsus. | Middle toe. |
|-------------------------------------------------------------------|-------|-------|---------|---------|-------------|
| MALES.                                                            |       |       |         |         |             |
| One adult male from southern Honduras (Rio Segovia).....          | 56.5  | 61.5  | 14.5    | 20.5    | 15.5        |
| Four adult males from Nicaragua.....                              | 54.6  | 68.1  | 14.6    | 20.5    | 15          |
| Ten adult males from Costa Rica.....                              | 57.1  | 64    | 14.6    | 21.2    | 15.4        |
| Five adult males ( <i>S. p. pudica</i> ) from eastern Panamá..... | 57.8  | 71    | 15.2    | 21.2    | 15.9        |
| FEMALES.                                                          |       |       |         |         |             |
| One adult female from southern Honduras (Rio Segovia).....        | 53    | ..... | 13.5    | 19.5    | 14.5        |
| Three adult females from Nicaragua.....                           | 53.2  | 68    | 14      | 20.3    | 14.8        |
| Ten adult females from Costa Rica.....                            | 54.7  | 71.9  | 14.2    | 20.9    | 15.5        |
| Two adult females ( <i>S. p. putia</i> ) from eastern Panamá..... | 55.2  | 66    | 14.5    | 21      | 15.2        |

- and Pozo del Rio Grande, Costa Rica; descr. young).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 635 (Costa Rica; crit.; habits; descr. nest and eggs).  
 [Synallaxis] *pudica* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 63, part.—SHARPE, Hand-list, iii, 1901, 55, part (Honduras, etc.).

### SYNALLAXIS ALBESCENS LATITABUNDA Bangs.

#### COSTA RICAN GRAY-BREASTED SYNALLAXIS.

Similar to *S. a. albigularis* (Sclater),<sup>a</sup> of Colombia and Venezuela, but smaller, gray of chest averaging deeper and purer (less brownish), cinnamon-rufous of occiput more extended, and greater wing-coverts brighter cinnamon-rufous.

*Adults (sexes alike).*—Forehead (back to at least middle of eyes) mouse gray, the feathers with indistinct mesial streaks of darker; crown, occiput, and nape plain cinnamon-rufous; back, scapulars, rump, upper tail-coverts, tail, and remiges plain grayish brown (hair brown), the shafts of rectrices darker, the outer webs of secondaries and sub-basal portion of that of inner primaries usually slightly tinged with cinnamon; lesser and middle wing-coverts uniform cinnamon-rufous (somewhat lighter than color of crown and occiput), the greater coverts similar but (usually) slightly paler and duller; loreal region grayish white anteriorly, passing into pale mouse gray posteriorly, the suborbital and malar regions similar; auricular region deeper mouse gray, narrowly streaked with white; supra-auricular region, hindneck, sides of neck, chest, and sides of breast plain mouse gray, slightly paler on median portion of chest; chin and throat white, the lower throat with a more or less concealed patch of dusky or dark slate color, the feathers tipped with white or pale gray and marked by a narrow mesial streak of the same; abdomen and median portion of lower breast white; sides, flanks, and under tail-coverts light broccoli brown or drab; under wing-coverts pale pinkish buff, the inner webs of remiges indistinctly edged with the same; bill black, the lower-basal portion of mandible whitish (in dried skins); iris brown; legs and feet light horn color (in dried skins).

*Young.*—Above plain brown (between sepia and raw-umber), the occipital region tinged (more or less) with more rufescent brown, the tail more russet brown, the middle and greater wing-coverts margined or edged with russet; lesser wing-coverts cinnamon or russet; general color of under parts pale buffy brown, passing into pale brownish buff on throat and chin and into brownish buff on flanks, the sides of chest and breast shaded with deeper and more grayish brown, the abdomen inclining to buffy white.

*Adult male.*—Length (skins), 129–139 (135); wing, 51.5–54 (52.2); tail, 66–70 (68.5); culmen, 11–12 (11.7); tarsus, 18.5–19.5 (18.9); middle toe, 12.5–13.5 (12.9).<sup>b</sup>

<sup>a</sup> See p. 188.

<sup>b</sup> Eight specimens.

*Adult female*.—Length (skins), 126–136 (130); wing, 48.5–51 (49.9); tail, 60–67.5 (62.9); culmen, 11–12.5 (11.7); tarsus, 17.5–19 (18.5); middle toe, 13.<sup>a</sup>

Southwestern Costa Rica (Buenos Aires; Boruca, Paso Real, and Barranca, Boruca; Térraba); western Panamá (Santa Fé de Verágua)?<sup>b</sup>

*Synallaxis albescens* (not of Temminck) SALVIN, Proc. Zool. Soc. Lond., 1867, 143 (Santa Fe de Verágua, Panama; crit.).—SCLATER, Proc. Zool. Soc. Lond., 1874, 9, part (Verágua; monogr.); Cat. Birds Brit. Mus., xv, 1890, 43, part (Santa Fe de Verágua).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1891, 147, part (Santa Fé de Verágua).—CHERRIE, Expl. Zool. Merid. Costa Rica, 1893, 38 (Térraba and Buenos Aires, s. w. Costa Rica).

[*Synallaxis*] *albescens* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 63, part.—SHARPE, Hand-list, iii, 1901, 54, part (Panamá).

*Synallaxis albescens latitabunda* BANGS, Auk, xxiv, July, 1907, 298 (Boruca, s. w. Costa Rica; coll. E. A. and O. Bangs).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 634 (s. w. Costa Rica; habits).

### SYNALLAXIS ALBESCENS HYPOLEUCA Ridgway.

#### WHITE-BREASTED SYNALLAXIS.

Similar to *S. a. latitabunda* but under parts (including chest) nearly pure white (only the upper portion and sides of chest very faintly shaded with pale brownish gray, passing into pale buffy brown or light wood brown on sides and flanks and pale brownish buff on under tail-coverts); general color of upper parts lighter and more buffy brown.

<sup>a</sup> Four specimens.

| Locality.                                                                       | Wing. | Tail. | Culmen. | Tarsus. | Middle toe. |
|---------------------------------------------------------------------------------|-------|-------|---------|---------|-------------|
| MALES.                                                                          |       |       |         |         |             |
| Eight adult males from Costa Rica.....                                          | 52.2  | 68.5  | 11.7    | 18.9    | 12.9        |
| Nine adult males ( <i>S. a. albigularis</i> ) from Colombia.....                | 56.3  | 74.3  | 11.7    | 19.3    | 14.1        |
| Five adult males ( <i>S. a. albigularis</i> ) from Venezuela.....               | 56.4  | 74.9  | 12.2    | 19.7    | 13.8        |
| Nine adult males ( <i>S. a. albigularis</i> ) from Trinidad.....                | 55.3  | 70    | 12.4    | 19.6    | 13.6        |
| Two adult males ( <i>S. a. nesiotis</i> ) from Margarita Island, Venezuela..... | 54    | 69.7  | 12.2    | 18.2    | 13.2        |
| One adult male ( <i>S. a. albescens</i> ) from Argentina.....                   | 53.5  | 68.5  | 11      | 18      | 11.5        |
| FEMALES.                                                                        |       |       |         |         |             |
| Four adult females from Costa Rica.....                                         | 49.9  | 62.9  | 11.7    | 18.5    | 13          |
| Five adult females ( <i>S. a. albigularis</i> ) from Colombia.....              | 55    | 68.8  | 11.7    | 19.3    | 13.7        |
| Two adult females ( <i>S. a. albigularis</i> ) from Venezuela.....              | 53.2  | 66.5  | 12.2    | 19.2    | 13.5        |
| Three adult females ( <i>S. a. albigularis</i> ) from Trinidad.....             | 53.3  | 69.5  | 12.7    | 19      | 14.2        |
| One adult female ( <i>S. a. albigularis</i> ?) from British Guiana.....         | 57    | 77    | 13      | 19.5    | 13.5        |
| One adult female ( <i>S. a. nesiotis</i> ) from Margarita Island.....           | 55    | 73.5  | 12.5    | 19      | 14.5        |

<sup>b</sup> No Panamá specimens seen by me.



*Adult (sex not determined).—*Length (skin), about 125; wing, 60; tail, 59 (middle rectrices imperfect); exposed culmen, 11; tarsus, 18; middle toe, 14.<sup>a</sup>

Eastern Panamá (Natá, Coclé).

*Synallaxis albescens hypoleuca* RIDGWAY, Proc. Biol. Soc. Wash., xxii, April 17, 1909, 73 (Natá, Coclé, Panamá; coll. U. S. Nat. Mus.).

#### Genus PSEUDOCOLAPTES Reichenbach.

*Pseudocolaptes* REICHENBACH, Handb. Spec. Orn., 1853, 209. (Type, *P. semicinnamomeus* Reichenbach=*Anabates boissonneautii* Lafresnaye.)

*Otipne* b CABANIS and HEINE, Mus. Hein., ii, Aug., 1859, 30. (Type, *Anabates boissonneautii* Lafresnaye.)

Large scansorial Furnariidæ (length about 200 mm.) with narrow (slit-like), broadly operculate nostrils, wedge-shaped compressed bill, acuminate, rigid-shafted rectrices, and with a tuft of elongated soft (white or buff) feathers on each side of neck.

Bill decidedly shorter to longer than head, nearly elongate-cuneate in lateral profile, much compressed, its width at loreal antiæ decidedly less than its depth at same point and equal to less than one-third the distance from nostril to tip of maxilla, the latter scarcely if at all decurved; culmen rather indistinctly ridged anteriorly, the mesorhinium distinctly flattened, sometimes lightly arched above nostrils, and thence to tip nearly straight or but slightly decurved; maxillary tomium strongly deflected basally, the anterior half straight or very faintly concave, without trace of subterminal notch; the mandibular tomium also straight (or very nearly so) and without trace of notch; gonys straight, slightly ascending terminally, the mandibular rami sometimes strongly deflected basally. Nostril exposed, posteriorly in contact with latero-frontal feathering, very narrow (slit-like), broadly operculate, the posterior portion of the operculum invaded by the short feathering of the latero-frontal antiæ. Rictal bristles wanting, and feathers of chin, etc., without terminal setæ. Wing large and pointed, with the longest primaries exceeding secondaries by more than length of bill from nostril; sixth, seventh, and eighth primaries longest and nearly equal, the tenth (outermost) more than two-thirds as long as the longest, the ninth intermediate between fourth and fifth. Tail about six-sevenths as long as wing, graduated for about one-fourth its length (graduation much less than length of tarsus), the rectrices (12) broad, acuminate, with rigid but slender shafts. Tarsus about one-fourth as long as wing, stout, distinctly scutellate (endaspidean); middle toe, with claw, decidedly shorter than tarsus; outer toe, without claw, reaching to beyond middle of subterminal phalanx of middle toe, the inner toe slightly, but dis-

<sup>a</sup> One specimen (the type).

<sup>b</sup> "Von oſc (Ohr) und ζηνη (Baumhacker)." (Cabanis and Heine.)

tinely, shorter; hallux about as long as inner toe but much stouter; basal phalanx of middle toe wholly united to outer toe, united for most, if not the whole, of its length to inner toe; claws large and strong, acute, that of the hallux nearly as long as the digit.

*Coloration*.—Tawny or rufescent brown above, the rump, upper tail-coverts, and tail cinnamon-rufous; wings sometimes partly black; pileum and hindneck (sometimes back also) streaked; chin, throat, and tuft on sides of neck white or buff; under parts of body tawny or light ocher-brownish, the chest more or less distinctly flammulated or squamated.

*Nidification*.—Nests placed in holes of trees; eggs white.

*Range*.—Costa Rica to Peru and Bolivia. (Three species.) <sup>a</sup>

#### KEY TO THE SPECIES OF PSEUDOCOLAPTES.

- a. Neck-tufts white; primaries and wing-coverts rusty brown. (Colombia to Ecuador, Peru, and Bolivia).....*Pseudocolaptes boissonneautii* (extralimital).<sup>b</sup>  
 aa. Neck-tufts buff; primaries and wing-coverts brownish black. (Costa Rica and western Panamá.).....*Pseudocolaptes lawrencii* (p. 197).

#### PSEUDOCOLAPTES LAWRENCII Ridgway.

##### LAWRENCE'S PSEUDOCOLAPTES.

*Adults (sexes alike)*.—Pileum with feathers dusky basally and laterally (and sometimes on terminal margin), the mesial and terminal or subterminal portions light brown, with a narrow shaft-streak of paler (buffy or buffy whitish); hind-neck similarly marked but with the pale mesial streaks much broader; back and scapulars tawny-brown or russet, the feathers usually with narrow and mostly indistinct terminal margins of dusky; rump and upper tail-coverts plain rufous-tawny, the tail clear cinnamon-rufous, with shafts of rectrices chestnut; lesser wing-coverts tawny-brown or russet, dusky centrally (this mostly concealed); middle and greater coverts black or brownish black, tipped with tawny-buff or ochraceous; secondaries plain tawny-brown or russet, the distal ones passing into black basally; primaries grayish brown, the shorter (proximal) ones more blackish; lores dusky grayish brown; auricular region blackish brown or dusky, narrowly streaked with dull whitish or buffy, margined above by a narrow (usually indistinct) superciliary and supra-auricular streak of dull buffy or whitish; chin, throat, and malar region im-

<sup>a</sup> I have not seen *P. flavescens* Berlepsch and Stolzmann, from central Peru.

<sup>b</sup> *Anabates boissonneautii* Lafresnaye, Rev. Zool., iii, Apr., 1840, 104 (Bogotá, Colombia; coll. A. Boissonneau).—*Philydor boissonneautii* Reichenbach, Handb. Spec. Orn., 1853, 200.—*Otipne boissonneauti* Cabanis and Heine, Mus. Hein., ii, Aug., 1859, 30 (Caracas, Venezuela).—*Pseudocolaptes boissonneauti* Sclater, Proc. Zool. Soc. Lond., 1860, 88 (Puellaró, Ecuador); Cat. Birds Brit. Mus., xv, 1890, 78, excl. syn. part.—*Anabates auritus* Tschudi, Wieg. Archiv für Naturg., xiii, pt. i, 1844, 294; Fauna Peruana, Aves, 1845, 239.—*Pseudocolaptes semicinnamomeus* Reichenbach, Handb. Spec. Orn., 1853, 210 (Bogotá).

maculate pale buff or buffy white, passing into clear buff on subauricular region and sides of upper neck, where feathers are developed into a short but distinct tuft; rest of under parts pale yellowish buff, passing into light tawny-brown or cinnamon on sides, flanks, and under tail-coverts, the feathers of chest and lower throat edged and (usually) terminally margined with dusky or dark olive, producing a more or less squamate effect, these dusky edgings much broader on sides of chest; under wing-coverts ochraceous-buff; inner webs of remiges broadly but not sharply edged with pale brownish buffy; maxilla brownish black, paler on tomium; mandible dull whitish (in dried skins) with a broad dusky streak along upper portion; legs and feet horn color (in dried skins).

*Young*.—Similar to adults but pileum and auricular region nearly (sometimes quite) uniform black or brownish black, chest heavily squamated with black or dusky, feathers of whole throat more or less broadly margined with blackish, and under parts of body more tawny.

*Adult male*.—Length (skins), 187–203 (197); wing, 98–114 (106.3); tail, 85–97.5 (91.6); culmen, 20.5–23.5 (21.9); tarsus, 23.5–27 (25.4); middle toe, 17–18.5 (17.7).<sup>a</sup>

*Adult female*.—Length (skins), 185–201 (195); wing, 96.5–102.5 (99.7); tail, 84–92.5 (88.2); culmen, 21.5–25 (23.6); tarsus, 23.5–25.5 (24.3); middle toe, 16.5–18.5 (17.2).<sup>a</sup>

Highlands of Costa Rica (Navarro de Cartago; La Palma de San José; El Roble, Volcán de Irazú; Volcán de Turrialba; Escazú; Las Vueltas, Los Reyes, and Santa Maria, Dota; Ojuras de Térraba) and western Panamá (Cordillera del Chucu; Calobre; Volcán de Chiriquí, 10,000–10,300 ft.; Boquete, 7,500 ft.).

*Pseudocolaptes boissonneauti* (not *Anabates boissonneautii* Lafresnaye) SALVIN, Proc. Zool. Soc. Lond., 1870, 192 (Cordillera del Chucu, Veragua; crit.).

*Pseudocolaptes boissonneauti?* BOUCARD, Proc. Zool. Soc. Lond., 1878, 59 (Navarro, Costa Rica; crit.).

*Pseudocolaptes lawrencii* RIDGWAY, Proc. U. S. Nat. Mus., i, sig. 16, Dec. 10, 1878, 253, 254 (Navarro and La Palma de San José, Costa Rica; coll. U. S. Nat. Mus.).—SCLATER, Cat. Birds Brit. Mus., xv, 1890, 79 (Cordillera del Chucu

<sup>a</sup> Twelve specimens.

| Locality.                                              | Wing. | Tail. | Culmen. | Tarsus. | Middle toe. |
|--------------------------------------------------------|-------|-------|---------|---------|-------------|
| MALES.                                                 |       |       |         |         |             |
| Ten adult males from Costa Rica .....                  | 107.2 | 92.7  | 21.5    | 25.5    | 17.5        |
| Two adult males from western Panamá (Chiriquí) .....   | 101.5 | 86.2  | 23.5    | 24      | 17.7        |
| FEMALES.                                               |       |       |         |         |             |
| Ten adult females from Costa Rica .....                | 97.5  | 88.3  | 23.5    | 24.2    | 17          |
| Two adult females from western Panamá (Chiriquí) ..... | 100.2 | 87.7  | 24      | 24.7    | 18.2        |



and Calobre, Veragua).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1891, 153.—BANGS, Proc. New Engl. Zool. Club, iii, 1902, 44 (Boquete and Volcán de Chiriquí, 4,000–10,300 ft., Panamá).—MENEGAUX and HELLMAYR, Mém. Soc. Hist. Nat. d'Autun, xix, 1906, 83 (crit.; type of *P. costaricensis* Boucard=juv.).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 637 (Costa Rica; crit.; habits).

[*Pseudocolaptes*] *lawrencei* SHARPE, Hand-list, iii, 1901, 62.

*Pseudocolaptes costaricensis* BOUCARD, Bull. Soc. Zool. France, 5 année, pt. 5–6, 1880, 230 (Navarro, Costa Rica; coll. A. Boucard; =young).

*Pseudocolaptes lawrencei* FERRY, Pub. 146, Field Mus. N. H., orn. ser., i, no. 6, 1910, 270 (Volcán de Turrialba, Costa Rica).

### Genus HYLOCTISTES Ridgway.

*Hyloctistes a* RIDGWAY, Proc. Biol. Soc. Wash., xxii, Apr. 17, 1909, 72. (Type, *Philydor virgatus* Lawrence.)

Rather large Furnariidæ (length about 185 mm.) with bill nearly as long as head (exposed culmen longer than tarsus), basal phalanx of middle toe wholly adherent to both lateral toes, and with pileum, hindneck, back, foreneck, and chest streaked.

Bill about as long as head, rather narrow, straight, compressed, its width at loral antiæ decidedly less than its width at same point and equal to less than one-third the distance from nostril to tip of maxilla; culmen broadly ridged, nearly straight, slightly but decidedly decurved terminally, the tip of maxilla not uncinatè; maxillary tomium faintly concave distally, without trace of subterminal notch; mandibular tomium nearly straight to near tip, where very slightly decurved; gonys nearly straight, ascending terminally slightly prominent and convex basally. Nostril exposed, posteriorly in contact (or nearly so) with loral feathering, rather broadly oval, longitudinal, non-operculate, with an inner oblique septum showing within the upper posterior portion. Rictal bristles wanting, and feathers of chin, etc., without terminal setæ. Wing moderate, rather pointed, the longest primaries exceeding secondaries by less than length of bill from nostril; sixth, seventh, and eighth primaries longest and nearly equal, the tenth (outermost) about two-thirds as long as the longest, the ninth intermediate between fourth and fifth and very much longer than secondaries. Tail a little less than five-sixths as long as wing, graduated for more than one-fourth its length, the rectrices (12) rather narrow, minutely acuminate terminally. Tarsus shorter than exposed culmen, about one-fourth as long as wing, rather stout, distinctly scutellate; middle toe, with claw, about as long as tarsus; outer toe, without claw, reaching to slightly beyond middle of subterminal phalanx of middle toe, the inner toe slightly but distinctly shorter; hallux about as long as inner toe, but decidedly stouter; basal phalanx of middle toe completely adherent to both lateral toes;

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*a* ὕλη, a wood, forest; κτῆσις, a settler.

claws rather large, strongly curved, that of the hallux shorter than the digit.

*Coloration*.—Olive-brown (paler below), the upper tail-coverts and tail chestnut; pileum, hindneck, and back more dusky, narrowly streaked with paler; chin and throat buff, the chest indistinctly streaked or flammulated with the same.

*Range*.—Costa Rica and western Panamá. (Monotypic.)

### HYLOCTISTES VIRGATUS (Lawrence).

#### STRIPED HYLOCTISTES.

*Adults (sexes alike)*.—Pileum and hindneck dark sooty brown or brownish black, broadly streaked with pale olive, each feather with a narrow shaft-streak of pale buffy; back and scapulars olive-brown, sometimes suffused with dusky, usually narrowly streaked (at least on upper back) with pale buffy; lower rump, upper tail-coverts, and tail chestnut; wings chestnut-brown, usually lighter and more rufescent on basal portion of primaries; sides of head rather broadly streaked with dull grayish buff and dusky; chin and throat buff, the feathers usually edged or margined (more or less distinctly) with olive or dusky, at least on lower throat; rest of under parts light buffy olive, passing into a more rufescent hue on under tail-coverts, the chest, upper breast, and sides (especially the first) more or less distinctly streaked with paler (dull buffy); under wing-coverts and broad edging to inner webs of remiges ochraceous-buff; maxilla dark horn color (sometimes nearly black on culmen), mandible paler, especially on under side; iris brown; legs and feet horn color (in dried skins).

*Adult male*.—Length (skins), 158–188 (165); wing, 79.5–86.5 (83.5); tail, 65–70 (67.7); culmen, 22–24.5 (23.4); tarsus, 19–21 (20.1); middle toe, 15.5–16.5 (15.9).<sup>a</sup>

*Adult female*.—Length (skins), 152–190 (170); wing, 79–85.5 (82); tail, 63–73 (69.2); culmen, 21–24.5 (23.2); tarsus, 19.5–21.5 (20.5); middle toe, 15–16.5 (15.7).<sup>b</sup>

Costa Rica (Angostura; San Carlos; Jiménez; Carrillo; El Hogár; La Cristina; Pozo del Rio Grande; Pozo del Pitál; El Pozo de Terraba; Palmár; Boruca; La Vijagua) and Panamá (Natá, Coclé).

*Philydor virgatus* LAWRENCE, Ann. Lyc. Nat. Hist. N. Y., viii, May, 1867, 468 (Angostura, Costa Rica; coll. U. S. Nat. Mus.); ix, 1868, 106 (Angostura).—FRANTZIUS, Journ. für Orn., 1869, 304 (Costa Rica).—BERLEPSCH, Proc. U. S. Nat. Mus., xi, 1888, 565 (crit.).—SCLATER, Cat. Birds Brit. Mus., xv, 1890, 96,

<sup>a</sup> Ten specimens from Costa Rica. An adult male from Natá, Coclé, Panamá, measures as follows: Length (skin), 164; wing, 84; tail, 69; tarsus, 21; middle toe, 16. The bill is broken.

<sup>b</sup> Eight specimens from Costa Rica.

footnote (synonymy).—CHERRIE, Proc. U. S. Nat. Mus., xiv, 1891, 534 (San Carlos, Costa Rica); Anal. Inst. Fis.-Geog. Costa Rica, vi, 1893, 17 (Pozo del Pitál, Costa Rica; crit.).

[*Philydor*] *virgatus* GRAY, Hand-list, i, 1869, 172, no. 2317.

*Automolus virgatus* SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, sig. 19, July, 1891, 155 (Angostura, Costa Rica).—CHERRIE, Expl. Zool. Merid. Costa Rica, 1893, 39 (Palmar, s. w. Costa Rica).—BANGS, Auk, xxiv, 1907, 299 (Pozo del Rio Grande, s. w. Costa Rica).

[*Automolus*] *virgatus* SHARPE, Hand-list, iii, 1901, 66.

*Hyloctistes virgatus* CARRIKER, Ann. Carnegie Mus., vi, 1910, 639 (Costa Rica; habits).

### Genus PHILYDOR Spix.

*Philydor* SPIX, Av. Sp. Nov. Bras., i, 1824, 73. (Type, *Sphenura superciliaris* Lichtenstein=*Anabates atricapillus* Maximilian.)

*Phylidor* (emendation?) LESSON, Traité d'Orn., 1831, 317.

*Dendroma* SWAINSON, Classif. Birds, ii, 1837, 316. (Type, *D. caniceps* Swainson=*Dendrocopus rufus* Vieillot.)

Medium sized Furnariidæ (length about 145–190 mm.) with bill much shorter than head (culmen shorter than tarsus), basal phalanx of middle toe wholly united to lateral toes, and plain (unstreaked) plumage.

Bill much shorter than head, moderately compressed, its width at loral antiæ decidedly less than its depth at same point and equal to slightly less to much more than one-third the distance from nostril to tip of maxilla; culmen slightly to distinctly ridged, usually more or less strongly curved from near base, sometimes (*P. rufus*) nearly straight to near tip, where abruptly decurved, the tip of maxilla minutely uncinatè; tomia straight or nearly so for most of their length, usually more or less (but, except in *P. rufus*, always slightly) decurved distally, without trace of subterminal notch; gonys nearly to quite straight, ascending terminally, slightly convex and prominent basally. Nostril exposed, posteriorly in contact with loral feathering, small, longitudinally oval, nonoperculate or with narrow superior membrane. Rictal bristles wanting, and feathers of chin, etc., without terminal setæ. Wing moderate to rather long, rather pointed, with longest primaries exceeding secondaries by at least length of gonys; seventh and eighth, sixth, seventh, and eighth, or sixth and seventh, primaries longest, the tenth (outermost) about three-fourths as long as the longest, the ninth equal to or longer than fifth and much longer than secondaries. Tail three-fourths as long as wing (*P. pyrrhodes*) to as long as wing (*P. rufus*), slightly rounded (*P. fuscipennis*, *P. erythrocercus*) to graduated for more than one-fourth its length (*P. pyrrhodes*, *P. rufus*), the rectrices (12) subrounded to subacuminate terminally. Tarsus longer than culmen, less than one-fourth as long as wing (*P. lichtensteini*, *P. fuscipennis*) to more than one-fourth as long (*P. rufus*), rather stout,



distinctly scutellate; middle toe, with claw, equal to tarsus (*P. fuscipennis*) or more or less shorter (other species); outer toe, without claw, reaching to or beyond middle of subterminal phalanx of middle toe, the inner toe slightly shorter; hallux about as long as outer toe but much stouter; basal phalanx of middle toe wholly united to lateral toes; claws moderate in size and curvature, that of the hallux decidedly shorter than the digit.

*Coloration*.—Plain brown, brown and gray, or rufescent above, the tail and upper tail-coverts usually cinnamon-rufous or rufous-tawny; a more or less distinct superciliary stripe of rufous-tawny, ochraceous, buff, or whitish; under parts plain tawny, ochraceous, or buffy. Sexes alike.

*Range*.—Costa Rica to Peru, Bolivia, southeastern Brazil, and Cayenne. (About fifteen species.)<sup>a</sup>

KEY TO THE SPECIES OF PHILYDOR.<sup>b</sup>

- a. Upper tail-coverts buffy brown, like back but lighter; wings cinnamon-rufous, contrasting strongly with color of back.
- b. Pileum distinctly gray, the forehead broadly and abruptly buffy. (Southeastern Brazil) ..... **Philydor rufus** (extralimital).<sup>c</sup>
- bb. Pileum not distinctly, if at all, gray, the forehead neither broadly nor abruptly buffy.
- c. Coloration much paler, the back, etc., light buffy brown, under parts buff; pileum brownish gray or grayish brown. (Venezuela.)

**Philydor columbianus** (extralimital).<sup>d</sup>

<sup>a</sup> Of the fifteen species enumerated under *Philydor* in Dr. Sharpe's Hand-List of the Genera and Species of Birds (vol. iii, 1901, pp. 68, 69), I have examined only *P. atricapillus* (Maximilian), *P. rufus* (Vieillot), *P. lichtensteini* Cabanis, *P. pyrrhodes* (Cabanis), *P. fuscipennis* Salvin, *P. panerythrus* Sclater, and *P. erythrocerus* (Pelzeln)—leaving eight species, or more than one-half, unknown to me autoptically. A careful comparison of all the species would, I feel quite sure, result in subdivision of the genus, which is certainly far from being a homogeneous or natural group.

<sup>b</sup> Including only the more closely allied extralimital forms that are available at this time.

<sup>c</sup> *Dendrocopus rufus* Vieillot, Nouv. Dict. d'Hist. Nat., xxvi, 1818, 119.—*P[hilydor] rufus* Cabanis and Heine, Mus. Hein., ii, Aug., 1859, 29.—*Philydor rufus* Sclater, Proc. Zool. Soc. Lond., 1861, 378; Cat. Birds Brit. Mus., xv, 1890, 97.—*S[phcnura] poliocephala* Lichtenstein, Verz. Doubl., 1823, 41 (S. Paulo, s. Brazil; coll. Berlin Mus.).—*Philydor ruficollis* Spix, Av. Bras., "1824," 74, pl. 75 (int. prov. Bahia, Brazil).—*D[endroma] caniceps* Swainson, Classif. Birds, ii, 1837, 316 (based on "Braz. Birds, pl. 80").—*Xenops rufifrons* Lesson, Traité d'Orn., 1831, 317 (ex Valenciennes, manuscript; new name for *Philydor ruficollis* Spix).

<sup>d</sup> *P[hilydor] columbianus* Cabanis and Heine, Mus. Hein., ii, Aug., 1859, 29, footnote (Puerto Cabello, Venezuela; coll. Berlin Mus.).—*Philydor columbianus* Sclater and Salvin, Proc. Zool. Soc. Lond., 1868, 170 (Caracas, Venezuela).—*Philydor colombianus* Sclater, Cat. Birds Brit. Mus., xv, 1890, 98.

cc. Coloration much darker, the back, etc., deep tawny-brown, under parts dull ochraceous (clear ochraceous on throat). (Costa Rica to Colombia.)

*Philydor panerythrus* (p. 203).

aa. Upper tail-coverts bright chestnut, like tail; wings not cinnamon-rufous.

b. Wings rusty brown. (Southeastern Brazil.)

*Philydor atricapillus* (extralimital).<sup>a</sup>

bb. Wings brownish slate color. (Panamá.)..... *Philydor fuscipennis* (p. 204).

### PHILYDOR PANERYTHRUS Sclater.

#### OCHRACEOUS PHILYDOR.

*Adults (sexes alike).*—Crown and occiput grayish cinnamon-brown or buffy grayish brown, passing into dull cinnamon on forehead and tawny-brown (nearly raw-umber) on hindneck, back, and scapulars, the rump and upper tail-coverts lighter, more buffy brown or wood brown; tail dull cinnamon-rufous, the wings brighter cinnamon-rufous, except primary coverts, which are dull russet, and tips of primaries, which are dusky; superciliary stripe, sides of head, chin, and throat clear ochraceous, relieved by a more or less distinct brown or dusky postocular streak (occupying upper part of auricular region); rest of under parts lighter and duller ochraceous, becoming gradually duller and somewhat paler (nearly pale isabella color, but more yellowish) on flanks, under tail-coverts, and lower abdomen; under wing-coverts and broad edgings to inner webs of remiges clear ochraceous-buff; maxilla horn color, darker on terminal portion of culmen, paler on tomia; mandible dull whitish (in dried skins) dusky or horn color on rami; iris brown;<sup>b</sup> legs and feet deep horn color (in dried skins).

*Adult male.*—Length (skins), 190–191 (190.5); wing, 96–103 (99.5); tail, 88–90 (89); culmen, 19–19.5 (19.2); tarsus, 23.5–24 (23.7); middle toe, 14.<sup>c</sup>

<sup>a</sup> *Anabates atricapillus* Maximilian, Reis. Bras., ii, 1821, 147.—*Philydor atricapillus* Sclater, Cat. Birds Brit. Mus., xv, 1890, 96.—*S[phenura] superciliaris* Lichtenstein, Verz. Doubl., 1823, 41 (Bahia, Brazil; coll. Berlin Mus.).—*Anabates superciliaris* Burmeister, Syst. Ueb. Th. Bras., iii, 1856, 28.—*Philydor superciliaris* Spix, Av. Bras., i, "1824," 73, pl. 73, fig. 1.—*Xenops canivetii* Lesson, Cent. Zool., livr. ii, Sept., 1830, 60, pl. 16 (Brazil).—*Xenops melanocephalus* Lesson, Traité d'Orn., livr. 4, Sept., 1830, 318 (new name for *Philydor superciliaris* Spix).

<sup>b</sup> W. W. Brown, jr., on label.

<sup>c</sup> Two specimens.

*Adult female*.—Length (skins), 180–187 (182.3); wing, 92–98 (95.2); tail, 86–87 (86.3); culmen, 17.5–19.5 (18.7); tarsus, 23.5; middle toe, 13.5–15 (14.3).<sup>a</sup>

Costa Rica (Birrís and Cervantes, Cartago; Laguária and Los Reyes, Santa Maria de Dota) and western Panamá (Boquete, 6,500 feet, Volcán de Chiriquí, 6,500–7,000 feet, and Caribbean slope, 7,000 feet, Chiriquí) to Colombia (Bogotá, etc.).

*Philydor panerythrus* SCLATER, Proc. Zool. Soc. Lond., 1862, 110 (Bogotá, Colombia; coll. P. L. Sclater); 1870, 329 (do.); Cat. Birds Brit. Mus., xv, 1890, 100 (Bogotá; Isth. Panamá; Costa Rica).—SALVIN, Ibis, 1870, 110 (Costa Rica; crit. nom.).—BERLEPSCH, Proc. U. S. Nat. Mus., xi, 1888, 565, in text (crit.).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1891, 160 ("Pirris," i. e., Birrís, and Cervantes, Costa Rica; Verágua; Panamá; Colombia).

*Philydor rufus panerythrus* ZELEDÓN, Anal. Mus. Nac. Costa Rica, i, 1887, 113 (Cervantes de Cartago, Costa Rica).

[*Philydor*] *panerythrus* GRAY, Hand-list, i, 1869, 172, no. 2315.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 66.—SHARPE, Hand-list, iii, 1901, 69.

*Philydor semirufus* (lapsus) SCLATER, Cat. Am. Birds, 1862, 360 (Bogotá).

*Automolus rufescens* LAWRENCE, Ann. Lyc. Nat. Hist., viii, 1867, 345 (Birrís, Costa Rica; coll. U. S. Nat. Mus.); ix, 1868, 106 (Costa Rica).—FRANTZIUS, Journ. für Orn., 1869, 304 (Costa Rica).—SALVIN, Ibis, 1870, 110 (crit.).—RIDGWAY, Proc. U. S. Nat. Mus., vi, 1883, 414 (Cervantes, Costa Rica).—BERLEPSCH, Proc. U. S. Nat. Mus., xi, 1888, 565 (crit.).

*Philydor panerythrus rufescens* CARRIKER, Ann. Carnegie Mus., vi, 1910, 641 (Costa Rica).

[*Philydor*] *rufescens* GRAY, Hand-list, i, 1869, 173, no. 2339.

*Philydor panerythrus rufus* (not *Dendrocopus rufus* Vieillot) BANGS, Proc. New Engl. Zool. Club, iii, Jan. 30, 1902, 44 (Boquete and Volcán de Chiriquí, Panamá, 6,500–7,000 feet).

### PHILYDOR FUSCIPENNIS Salvin.

#### DUSKY-WINGED PHILYDOR.

*Adults (sexes alike)*.—Pileum deep chestnut-brown (between mummy brown and prouts brown), the feathers with indistinct shaft-streaks of grayish; hindneck, back, and scapulars plain chestnut, passing into rufous-chestnut or dark cinnamon-rufous on rump, upper tail-coverts, and tail; wings wholly grayish brown (grayish

<sup>a</sup> Three specimens.

| Locality.                                            | Wing. | Tail. | Culmen. | Tarsus. | Middle toe. |
|------------------------------------------------------|-------|-------|---------|---------|-------------|
| MALES.                                               |       |       |         |         |             |
| One adult male from Costa Rica.....                  | 103   | 90    | 19.5    | 24      | 14          |
| One adult male from western Panamá (Chiriquí).....   | 96    | 88    | 19      | 23.5    | 14          |
| FEMALES.                                             |       |       |         |         |             |
| Two adult females from Costa Rica.....               | 95    | 86.5  | 18.7    | 23.5    | 14.7        |
| One adult female from western Panamá (Chiriquí)..... | 95.5  | 86    | 19.5    | 23.5    | 13.5        |



hair brown), in strong contrast with general coloration of upper and under parts; a conspicuous supra-auricular (postocular) streak of tawny-ochraceous; lores pale grayish or dull grayish white flecked with dusky; under parts plain dull tawny-ochraceous or raw-sienna, paler on chin and throat (where feathers are whitish sub-basally), deeper laterally, passing into more grayish brown on thighs and cinnamon-rufous or rufous-tawny on under tail-coverts; under wing-coverts ochraceous-buff, the inner webs of remiges broadly edged with dull white or buffy white; maxilla horn color, darker on culmen; mandible horn color with gonys (broadly) whitish (in dried skins); iris dark brown;<sup>a</sup> legs and feet light yellowish horn color (in dried skin).

*Adult male*.—Length (skin), 151.5; wing, 90; tail, 69.5; culmen, 18.5; tarsus, 20; middle toe, 14.5.<sup>b</sup>

Panamá (Santiago de Verágua; Cascajal, Coclé).

*Philydor fuscipennis* SALVIN, Proc. Zool. Soc. Lond., 1866, 72 (Santiago de Verágua, Panamá; coll. Salvin and Godman); 1867, 143 (Santiago de Verágua).—SCLATER, Cat. Birds Brit. Mus., xv, 1890, 99.—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1891, 161, pl. 46, fig. 1.

[*Philydor*] *fuscipennis* GRAY, Hand-list, i, 1869, 172, no. 2310.—SCLATER and SALVIN, Nóm. Av. Neotr., 1873, 66.—SHARPE, Hand-list, iii, 1901, 68.

#### Genus XENICOPSIS Cabanis.

*Syndactyla* (not *Syndactylus* Boitard, 1842) REICHENBACH, Handb. Spec. Orn., 1853, 171. (Type, *Xenops rufo-superciliatus* Lafresnaye.)

*Xenicopsis* <sup>c</sup> CABANIS and HEINE, Mus. Hein., ii, Aug., 1859, 32. (Type, *Xenops rufo-superciliatus* Lafresnaye.)

Medium sized Furnariidæ (length about 145–190 mm.) with small, roundish, non-operculate nostrils, culmen (from base) shorter than tarsus, and basal phalanx of middle toe not wholly united to lateral toes.

Bill much shorter than head, relatively rather deep and compressed, its width at loreal antiæ much less than its depth at same point and equal to one-third to much more than one-third the distance from nostril to tip of maxilla; culmen (from base) shorter (usually much shorter) than tarsus, broadly and rather indistinctly ridged, nearly straight for basal half (more or less), more or less strongly decurved terminally, the tip of maxilla slightly uncinatè or sub-uncinatè; maxillary tomium straight or very nearly so to near tip, where more or less (for a very short distance) decurved, without trace of sub-terminal notch; mandibular tomium straight or slightly convex (the

<sup>a</sup> Heyde, on label.

<sup>b</sup> One specimen, from Cascajal, Coclé, Panamá. An adult with sex undetermined from Panama (Lion Hill?) measures as follows: Wing, 92.5; tail, 70; culmen, 18.

<sup>c</sup> “Ξενικόψις (=ξένωψ) von ξενικός (fremdartig) und ὄψις (Aussehen).” (Cabanis and Heine.)

mandible then recurved or subfalcate), the extreme tip sometimes slightly decurved; gonys gently convex, strongly ascending terminally, more strongly convex and sometimes rather prominent basally. Nostril exposed, posteriorly in contact with loreal feathering, very small, broadly oval or roundish, non-operculate, but margined above by a very narrow concave membrane. Rictal bristles wanting, and feathers of chin, etc., without terminal setæ. Wing moderate, rather pointed, the longest primaries exceeding secondaries by less than length of bill from nostril to more than length of exposed culmen; sixth and seventh, sixth, seventh, and eighth, or fifth, sixth, seventh, and eighth, primaries longest, the tenth (outermost) between two-thirds and three-fourths as long as the longest, the ninth much longer than secondaries. Tail four-fifths as long as wing to very slightly longer than wing, rounded or graduated (graduation equal to from about one-ninth to more than one-third its total length), the rectrices (12) subacuminate. Tarsus longer than culmen, less than one-fourth to nearly one-third as long as wing, distinctly scutellate; middle toe, with claw, slightly shorter to slightly longer than tarsus; outer toe, without claw, reaching to about middle of subterminal phalanx of middle toe, the inner toe slightly shorter; hallux about as long as outer toe but decidedly stouter; basal phalanx of middle toe united for much the greater part to outer toe, for at least half to inner toe; claws rather large, strongly curved, and acute, that of the hallux decidedly shorter than the digit.

*Coloration*.—Above brown or olive, the pileum and back sometimes narrowly streaked with buffy or whitish, the former usually much duller (grayer) or more dusky; upper tail-coverts and tail cinnamon-rufous or chestnut; a more or less distinct (usually conspicuous) superciliary stripe (often an orbital ring also) of buff or ochraceous; under parts plain light buffy brown or yellowish brown, paler (yellowish or buffy) on throat, or conspicuously streaked or flammulated. Sexes alike.

*Range*.—Southern Mexico to Peru, Bolivia, southeastern Brazil, and Venezuela. (About thirteen species.) <sup>a</sup>

#### KEY TO THE SPECIES OF XENICOPSIS.

- a. Throat buffy or yellowish, chest light buffy brownish.
- b. Hindneck, upper back, and chest not streaked; upper tail-coverts brown, concolor with back; smaller (wing less than 90).

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<sup>a</sup> Of these the following have been examined in this connection: *X. rufosuperciliatus* (Lafresnaye), *X. oleagineus* Sclater, *X. subalaris* (Sclater), *X. percnopterus* Oberholser, *X. variegaticeps* Sclater, *X. striaticollis* (Sclater), *X. temporalis* (Sclater), and *X. anxius* (Bangs). The last four of these differ from typical *Xenicopsis* in much less graduated tail, relatively much longer wing and shorter tarsus, and unstreaked lower parts, and constitute a very well defined group, possibly a distinct genus.

- c. Superciliary stripe buff or ochraceous-buff, different from color of throat. (Southern Mexico to western Panamá.)..*Xenicopsis variegaticeps* (p. 207).  
 cc. Superciliary stripe pale yellowish buff, concolor with throat.  
 d. Throat pale dull buffy or buffy whitish.  
 e. Chest broadly streaked or flammulated with pale buffy; color of pileum browned. (Colombia to Peru and Bolivia.)

*Xenicopsis striaticollis* (extralimital).<sup>a</sup>

- ee. Chest plain light buffy brown, or with very indistinct (obsolescent) streaks; color of pileum more olivaceous. (Western Colombia to Ecuador and Bolivia.).....*Xenicopsis temporalis* (extralimital).<sup>b</sup>

- dd. Throat light buff-yellow. (Santa Marta district of Colombia.)

*Xenicopsis anxius* (extralimital).<sup>c</sup>

- bb. Hindneck, upper back, and chest, conspicuously streaked; upper tail-coverts chestnut, like tail. (*Xenicopsis subalaris*.)

- c. Pileum and back more distinctly streaked, under parts more broadly streaked, chestnut of upper tail-coverts and tail much darker; slightly smaller. (North-western Colombia to western Ecuador.)

*Xenicopsis subalaris subalaris*, adults (extralimital).<sup>d</sup>

- cc. Pileum and back much less distinctly streaked (the former much browner), under parts more narrowly streaked, and chestnut of upper tail-coverts and tail much lighter; slightly larger. (Costa Rica and Panamá.)

*Xenicopsis subalaris lineatus*, adults (p. 209).

- aa. Throat and chest tawny or tawny-ochraceous.

*Xenicopsis subalaris lineatus*, young (p. 210).

## XENICOPSIS VARIEGATICEPS (Sclater).

### SCALY-THROATED XENICOPSIS.

*Adults (sexes alike).*—Pileum and hindneck grayish olive, the feathers with narrow shaft-streaks of dull whitish or buffy (at least on crown) and very indistinctly margined terminally with dusky; back, scapulars, rump, upper tail-coverts and wings plain brown (between mummy and raw-umber), the secondaries more russet-

<sup>a</sup> (?) *Anabates montanus* Tschudi, Fauna Peruana, Aves, 1845, 240, pl. 20, fig. 1.—(?) *I[poborus] montanus* Cabanis and Heine, Mus. Hein., ii, 1859, 31 ("Brasilien," i. e., Bolivia).—(?) *Philydor montanus* Taczanowski, Proc. Zool. Soc. Lond., 1874, 528 (centr. Peru); Orn. du Pérou, ii, 1884, 153.—*Anabates striaticollis* Sclater, Proc. Zool. Soc. Lond., June 6, 1857, 17 (Bogotá, Colombia; coll. P. L. Sclater).—*Philydor striaticollis* Sclater, Proc. Zool. Soc. Lond., 1861, 378.—*Anabates striaticollis* Sclater, Cat. Birds Brit. Mus., xv, 1890, 108.—[*Xenicopsis*] *striaticollis* Sharpe, Hand-list, iii, 1901, 71.

<sup>b</sup> *Anabates temporalis* Sclater, Proc. Zool. Soc. Lond., 1859, 141 (Pallatanga, w. Ecuador; coll. P. L. Sclater).—*Anabates temporalis* Sclater, Cat. Am. Birds, 1862, 159; Cat. Birds Brit. Mus., xv, 1890, 107.—[*Xenicopsis*] *temporalis* Sharpe, Hand-list, iii, 1901, 70.

<sup>c</sup> *Xenicopsis anxius* Bangs, Proc. New Engl. Zool. Club, iii, March 31, 1902, 83 (Chirua, Sierra Nevada de Santa Marta, Colombia, 7,000 ft.; coll. E. A. and O. Bangs).

<sup>d</sup> *Anabates subalaris* Sclater, Proc. Zool. Soc. Lond., Aug., 1859, 141 (Pallatanga, w. Ecuador; coll. P. L. Sclater).—*Anabates subalaris* Sclater, Cat. Am. Birds, 1862, 159; Cat. Birds Brit. Mus., xv, 1890, 108, part.—(?) *Anabates mentalis* Taczanowski and Berlepsch, Proc. Zool. Soc. Lond., June 1, 1885, 96 (Machay, w. Ecuador; coll. Branicki Mus.).—[*Xenicopsis*] *subalaris* Sharpe, Hand-list, iii, 1901, 71, part.



brown, the primary-coverts dusky terminally and primaries passing into grayish brown or dusky at tips; tail clear chestnut; broad orbital ring and supra-auricular stripe buff or ochraceous-buff; lores mostly dusky or dark grayish, paler and more buffy (sometimes distinctly buffy) along upper margin; auricular region dusky, more or less broadly streaked with paler (except along upper portion) and with very narrow shaft-streaks of buffy, this dusky auricular area passing, in a more or less well-defined stripe, to the anterior portion of the malar region; chin and throat, together with middle and posterior portions of malar region, pale yellowish buff or cream-buff, the feathers of lower throat narrowly margined, more or less distinctly, with dusky; rest of under parts plain light buffy brown (sometimes approaching wood brown but more yellowish or cinnamonaceous), passing into darker brown (between raw-umber and isabella color) on flanks, the under tail-coverts more rufescent; under wing-coverts and broad edgings to inner webs of remiges ochraceous-buff; maxilla dusky horn color, paler toward tomium; mandible paler, whitish on gonys (broadly); iris brown; legs and feet horn color (in dried skins).

*Adult male*.—Length (skins), 151–167 (160); wing, 78.5–91 (89.8); tail, 64–75 (70.4); culmen, 15.5–17.5 (16.5); tarsus, 18–20 (19.1); middle toe, 14–16 (15.1).<sup>a</sup>

*Adult female*.—Length (skins), 146–160 (154); wing, 76–88.5 (81.2); tail, 63–72 (65.8); culmen, 14.5–17.5 (16.1); tarsus, 17.5–19.5 (18.7); middle toe, 14.5–16 (15).<sup>b</sup>

Southern Mexico, in States of Vera Cruz (Córdova; Jalapa; Uvero; Omealca; Motzorongo), Guerrero (Omilteme), Oaxaca (Choapám; Totóntepec), and Chiapas (Tumbalá; Chicharos), Guatemala (Baranca Honda; Savana Grande; Choctúm), Costa Rica (San Marcos;

<sup>a</sup> Twenty-one specimens.

<sup>b</sup> Thirteen specimens.

| Locality.                                               | Wing. | Tail. | Culmen. | Tarsus. | Middle toe. |
|---------------------------------------------------------|-------|-------|---------|---------|-------------|
| MALES.                                                  |       |       |         |         |             |
| Two adult males from Vera Cruz, Mexico.....             | 87.5  | 71.7  | 16.7    | 19.2    | 14.7        |
| Four adults from Guerrero, Mexico.....                  | 87.5  | 70.7  | 16.5    | 19.4    | 15.2        |
| Two adult males from Chiapas, Mexico.....               | 83    | 67.5  | 16      | 18.7    | 15          |
| Two adult males from Guatemala.....                     | 86.7  | 70.5  | 16.7    | 19      | 14.7        |
| Five adult males from Costa Rica.....                   | 83.7  | 68.7  | 16      | 18.8    | 15.2        |
| Six adult males from western Panamá (Chiriquí).....     | 88.7  | 72.2  | 16.9    | 19.2    | 15.2        |
| FEMALES.                                                |       |       |         |         |             |
| Two adult females from Guerrero, Mexico.....            | 81.5  | 65    | 16.7    | 18.5    | 15.5        |
| Eight adult females from Costa Rica.....                | 81    | 65.3  | 15.7    | 18.7    | 14.9        |
| Three adult females from western Panamá (Chiriquí)..... | 81.7  | 67.7  | 16.8    | 18.7    | 15          |

Rio Naranjo; Naranjo de Cartago; Azahár de Cartago; Turrialba; Candelária; Juan Viñas; Rio Súcio; Barranca; Dota, Dota Mountains, Los Reyes, Laguária, and Santa Maria, Dota; Ojuras de Térraba), and western Panamá (Boquete; Volcán de Chiriquí).

*Anabazenops variegiceps* SCLATER, Proc. Zool. Soc. Lond., 1856 (pub. Jan. 26, 1857), 289 (Córdova, Vera Cruz, Mexico; coll. A. Sallé); 1859, 382 (Choapám and Totóntepec, Oaxaca); Cat. Am. Birds, 1862, 159 (Córdova); Cat. Birds Brit. Mus., xv, 1890, 106 (Jalapa, Vera Cruz; Barranca Honda, Savana Grande, and Choctúm, Guatemala; Costa Rica; Volcán de Chiriquí; Veragua).—SALVIN and SCLATER, Ibis, 1860, 398 (Choctúm, Guatemala).—LAWRENCE, Ann. Lyc. N. Y., ix, 1868, 106 (Dota and Barranca, Costa Rica).—FRANTZIUS, Journ. für Orn., 1869, 304 (Costa Rica).—SUMICHRAST, La Naturaleza, v, 1881, 247 (Uvero and Omealca, Vera Cruz).—SALVIN, Proc. Zool. Soc. Lond., 1870, 192 (Volcán de Chiriquí, Panamá).—BOUCARD, Proc. Zool. Soc. Lond., 1878, 59 (Candelária, Costa Rica); Ann. Soc. Linn. Lyon, 1878, 37 (Guatemala).—SANCHEZ, An. Mus. Nac. Mex., i, 1877, 97 (Vera Cruz).—RIDGWAY, Proc. U. S. Nat. Mus., vi, 1883, 414 (Rio Súcio, Costa Rica).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1891, 162.—CHERRIE, Anal. Inst. Fis.-Geog. Costa Rica, vi, 1893, 17 (San Marcos and Rio Naranjo, s. w. Costa Rica).

[*Anabazenops*] *variegiceps* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 66.

[*Xenicopsis*] *variegiceps* HEINE and REICHENOW, Nomencl. Mus. Hein. Orn., 1890, 134 (Córdova, Vera Cruz).—SHARPE, Hand-list, iii, 1901, 70.

*Xenicopsis variegiceps* BANGS, Proc. New Engl. Zool. Club, iii, 1902, 44 (Boquete and Volcán de Chiriquí, Panamá, 4,000–4,800 ft.).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 642 (Costa Rica; habits).

*Anabazenops variegiceps* SUMICHRAST, Mem. Bost. Soc. N. H., i, 1869, 555 (tierra caliente of Vera Cruz, up to 1,300 m.).

[*Xenops*] *variegiceps* GRAY, Hand-list, i, 1869, 175, no. 2363.

*Xenicopsis variegiceps idoneus* BANGS, Proc. Biol. Soc. Wash., xix, July 30, 1906, 108 (Boquete, Chiriquí, Panamá; coll. E. A. and O. Bangs).

### XENICOPSIS SUBALARIS LINEATUS (Lawrence).

#### LINEATED XENICOPSIS.

Similar to *X. s. subalaris* (Sclater),<sup>a</sup> of Ecuador, but pileum much browner and much less distinctly streaked, back less distinctly streaked, chestnut of upper tail-coverts and tail much lighter, and under parts more narrowly streaked.

*Adults (sexes alike).*—Pileum sepia brown, usually with very narrow shaft-streaks of pale brown or buffy, at least on forehead, but these sometimes obsolete; hindneck more dusky brown, distinctly streaked with buff; back, scapulars, and wings brown (between mummy and raw umber), the back (at least upper portion) with more or less distinct narrow shaft-streaks of buff; lower rump, upper tail-coverts, and tail clear chestnut or deep chestnut-rufous; sides of head and neck (including malar region) dark sepia or dusky,

<sup>a</sup> See p. 207.

rather broadly streaked with light yellowish buff or buff-yellow; chin and upper throat immaculate yellowish buff or buff-yellow; rest of under parts light raw-umber brown (darker on lower throat and upper chest, passing posteriorly into a more tawny-olive hue on flanks and a more rufescent hue on under tail-coverts), narrowly streaked with pale yellowish buff, these streaks broader on chest and lower throat, sometimes obsolete on flanks and under tail-coverts; under wing-coverts and broad edgings to inner webs of remiges ochraceous-buff; bill dusky horn color, the gonys (broadly) whitish or pale yellowish horn color (in dried skins); iris brown; legs and feet horn color (in dried skins).

*Young*.—Upper parts essentially as in adults but color of pileum and hindneck more dusky, the latter with streaks rufescent instead of buffy yellowish; a more or less distinct narrow superciliary stripe of tawny; malar region (except anterior portion), sides of neck, chin, throat, and chest, tawny-ochraceous, tawny, or rufous-tawny (deepest on chest, paler on chin), the feathers with narrow and indistinct shaft-streaks of paler; rest of under parts similar medially in color to throat and chest but paler and duller, passing into a more olive hue on sides and flanks, the under tail-coverts more rufescent; under wing-coverts tawny or tawny-ochraceous, the inner webs of remiges broadly edged with ochraceous-buff; bill, etc., as in adults, or with mandible wholly dusky.

*Adult male*.—Length (skins), 178–195 (186); wing, 89–94 (91.9); tail, 78–86 (82.5); culmen, 18.5–20 (19.3); tarsus, 22–24 (22.9); middle toe, 17–19 (17.8).<sup>a</sup>

*Adult female*.—Length (skins), 172–187 (182); wing, 81.5–92 (87.2); tail, 73.5–83 (79.6); culmen, 19–21 (20); tarsus, 21.5–23.5 (22.6); middle toe, 17–18.5 (17.6).<sup>b</sup>

<sup>a</sup> Eleven specimens.

<sup>b</sup> Nine specimens.

| Locality.                                                              | Wing. | Tail. | Culmen. | Tarsus. | Middle toe. |
|------------------------------------------------------------------------|-------|-------|---------|---------|-------------|
| MALES.                                                                 |       |       |         |         |             |
| Nine adult males from Costa Rica.....                                  | 91.6  | 83.2  | 19.4    | 22.9    | 17.7        |
| Two adult males from western Panamá (Chiriquí).....                    | 93    | 78.5  | 19.5    | 22.7    | 18.2        |
| Two adult males ( <i>X. s. subalaris</i> ) from northwestern Colombia. | 89.7  | 80    | 19.2    | 22      | 17.7        |
| One adult male ( <i>X. s. subalaris</i> ) from western Ecuador.....    | 86.5  | 70.5  | 19      | 23.5    | 20          |
| FEMALES.                                                               |       |       |         |         |             |
| Seven adult females from Costa Rica.....                               | 86.8  | 78.9  | 20.1    | 22.4    | 17.6        |
| Two adult females from western Panamá (Chiriquí).....                  | 88.5  | 81.7  | 19.7    | 23      | 17.5        |



Costa Rica (Angostura; Cartago, Birris, La Estrella, Naranjo, and Azahár, Cartago; Volcan de Irazú; Cervantes; Coliblanco; Juan Viñas; La Hondura; Cariblanco de Sarapiquí; Santa Maria, Laguardia, and Los Reyes, Dota) and western Panamá (Calovévora; Calobre; Boquete; Volcán de Chiriquí, 4,500–7,800 feet).

*Anabazenops lineatus* LAWRENCE, Ann. Lyc. Nat. Hist. N. Y., viii, 1867, 127 (Angostura, Costa Rica; coll. U. S. Nat. Mus.); ix, 1868, 106 (Angostura, Birris, and Cervantes, Costa Rica).—FRANTZIUS, Journ. für Orn., 1869, 304 (Costa Rica).—SALVIN, Ibis, 1870, 110 (crit.).—BERLEPSCH, Proc. U. S. Nat. Mus., xi, 1888, 565 (crit.).

[*Xenops*] *lineatus* GRAY, Hand-list, i, 1869, 175, no. 2368.

*Anabazenops subalaris lineatus* BERLEPSCH, Proc. U. S. Nat. Mus., xi, sig. 36, Sept. 25, 1889, 566 (diagnosis).

*Anabazenops subalaris* (not *Anabates subalaris* Sclater) SALVIN, Ibis, 1870, 110 (Costa Rica; crit.); Proc. Zool. Soc. Lond., 1870, 192 (Calovévora, Verágua).—SCLATER, Cat. Birds Brit. Mus., xv, 1890, 108, part (Calovévora, Verágua; Irazú distr., Costa Rica).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1891, 163, part (Angostura, "Pirris," i. e., Birris, Cervantes, and Volcan de Irazú, Costa Rica; Calobre and Calovévora, Verágua).

[*Xenicopsis*] *subalaris* SHARPE, Hand-list, iii, 1901, 71, part (Costa Rica; Panamá).

*Xenicopsis subalaris lineatus* BANGS, Proc. New Engl. Zool. Club, iii, Jan. 30, 1902, 44 (Boquete and Volcán de Chiriquí, 4,500–7,800 ft., Panamá).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 643 (Costa Rica; crit.).—FERRY, Pub. 146, Field Mus. N. H., orn. ser., i, no. 6, 1910, 270 (Coliblanco, Costa Rica; crit.).

### Genus AUTOMOLUS Reichenbach.

*Automolus* (not *Automolis* Hübner, 1816), REICHENBACH, Handb. Spec. Orn., 1853, 174. (Type, *Sphenura sulphurascens* Lichtenstein=*Anabates leucophthalmus* Maximilian.)

*Cichlocolaptes* REICHENBACH, Handb. Spec. Orn., 1853, 174. (Type, *Anabates ferruginolentus* Maximilian.)

*Ipoborus*<sup>a</sup> CABANIS and HEINE, Mus. Hein., ii, Aug. 26, 1859, 31. (Type, *Sphenura sulphurascens* Lichtenstein=*Anabates leucophthalmus* Maximilian.)

Large Furnariidæ (length about 180–200 mm.) with roundish, non-operculate nostrils, basal phalanx of middle toe not wholly united to lateral toes, rather long and narrow bill (culmen, from base, longer than tarsus), and unstreaked coloration.

Bill nearly as long as head, narrow, compressed, its width at loreal antæ much less than its depth at same point and contained two and a half to more than three times in distance from nostril to tip of maxilla; culmen longer than tarsus, broadly and rather indistinctly ridged, nearly straight or very slightly curved for basal half or more, moderately and gradually decurved terminally, the tip of maxilla distinctly decurved but not uncinately; tomia straight for most of their length, slightly but distinctly decurved terminally, without trace of notch;

<sup>a</sup> "Von ψ (Holzwurm) und β:βρώσκω (fressen)." (Cabanis and Heine.)

gonys faintly convex basally, straight or faintly concave terminally, the tip of maxilla sometimes slightly decurved. Nostril exposed, posteriorly in contact with loreal feathering, rather small, roundish or broadly oval, non-operculate, but margined above by very narrow membranous rim. Rictal bristles wanting, and feathers of chin, etc., without terminal setæ. Wing moderate, much rounded, the longest primaries exceeding secondaries by much less than length of bill from nostril (except in *A. leucophthalmus*, in which the difference between tip of secondaries and longest primaries nearly equals length of exposed culmen); sixth, seventh, and eighth, sixth and seventh, fifth, sixth, and seventh, or fifth and sixth primaries longest, the tenth (outermost) less than two-thirds to three-fourths (*A. leucophthalmus*) as long as the longest, the ninth longer than fourth (*A. leucophthalmus*) to shorter than second (*A. rubiginosus*). Tail six-sevenths as long as wing (*A. leucophthalmus*) to as long as wing, graduated (graduation equal to from less than one-fourth, in *A. leucophthalmus* to more than one-third, in *A. veræ-pacis*, its total length), the rectrices (12) rather broad, with tip rounded or slightly subacuminate. Tarsus shorter than culmen (from base), a little more than one-fourth (in *A. leucophthalmus*) to nearly one third (in *A. veræ pacis*) as long as wing, distinctly scutellate; middle toe, with claw, shorter than tarsus; outer toe, without claw, reaching to or slightly beyond middle of subterminal phalanx of middle toe, the inner toe slightly shorter; hallux nearly as long as outer toe, but much stouter; basal phalanx of middle toe united for about half its length to outer toe, for less than half to inner toe; claws moderate to rather large, strongly curved, that of the hallux decidedly shorter than the digit.

*Coloration*.—Above plain brown (sometimes darker on pileum and hindneck), the upper tail-coverts and tail (sometimes rump also) cinnamon-rufous or chestnut; beneath plain tawny, cinnamon-brown, or pale buffy (more brownish laterally), the throat light russet, tawny, ochraceous, buff, or whitish; foreneck sometimes faintly squamated with brown or dusky; sometimes a tawny or ochraceous supra-auricular stripe. Sexes alike.

*Range*.—Southern Mexico to British Guiana, Peru, and southeastern Brazil. (About eighteen species.)<sup>a</sup>

<sup>a</sup> Of these I have examined, in this connection, only the following: *A. rubiginosus* (Sclater), *A. veræpacis* Salvin and Godman, *A. guerrensis* Salvin and Godman, *A. umbrinus* Salvin and Godman, *A. cervinigularis* (Sclater), *A. ochrolæmus* (Tschudi), *A. pallidigularis* Lawrence, *A. leucophthalmus* (Maximilian), and *A. rufipectus* Bangs. All these agree very well in structural characters except *A. leucophthalmus*, which is conspicuously different in its relatively longer and much more pointed wing, much less graduated tail, and much shorter gonys.

## KEY TO THE SPECIES AND SUBSPECIES OF AUTOMOLUS.

- a. Throat and upper chest strongly rufescent (tawny to chestnut); no trace of supra-auricular streak.
- b. Wings deep russet or chestnut-brown, more rufescent than back.
- c. Tail clear chestnut or rufous-chestnut.
- d. Pileum and hindneck decidedly darker and more chestnut brown than back.
- e. Throat and upper chest deep cinnamon-rufous or rufous-chestnut (whole of under parts darker). (Southeastern Mexico.)  
**Automolus rubiginosus** (p. 214).
- ee. Throat and upper chest tawny-ochraceous to rufous-tawny (whole of under parts lighter). (*Automolus veræpaci*s.)
- f. Pileum and hindneck dark vandyke brown or seal brown, back deep vandyke brown, throat and upper chest rufous-tawny. (Central Guatemala.).....**Automolus veræpaci veræpaci** (p. 214).
- ff. Pileum and hindneck light vandyke or deep russet brown, back deep tawny-brown, throat and upper chest tawny-ochraceous. (Western Guatemala.).....**Automolus veræpaci umbrinus** (p. 215).
- dd. Pileum and hindneck tawny-brown or russet-brown, concolor with back. (Southwestern Mexico.).....**Automolus guerrensis** (p. 216).
- cc. Tail dark chestnut (otherwise very much like *A. guerrensis*). (Santa Marta district of Colombia.).....**Automolus rufpectus** (extralimital).<sup>a</sup>
- bb. Wings deep sooty brown, concolor with back. (Western Panamá.)  
**Automolus fumosus** (p. 216).
- aa. Throat buff, chest buffy or light buffy grayish; a more or less distinct supra-auricular streak of buffy.
- b. Supra-auricular streak distinct; feathers of upper chest more or less distinctly margined with darker; under wing-coverts tawny-ochraceous; under tail-coverts more or less strongly rufescent. (*Automolus cervinigularis*.)
- c. Coloration more rufescent above, darker and more buffy below, the buff of throat merging gradually into the dull brownish buff or clay color of chest, etc. (Southeastern Mexico to eastern Nicaragua.)  
**Automolus cervinigularis cervinigularis** (p. 217).<sup>b</sup>
- cc. Coloration less rufescent (more olivaceous) above, darker and more olivaceous below, the buff of throat abruptly contrasted with the buffy olive of chest, etc. (Eastern Costa Rica; western Panamá?)  
**Automolus cervinigularis hypophæus** (p. 219).
- bb. Supra-auricular streak indistinct; under wing-coverts ochraceous-buff; feathers of chest without darker margin; under tail-coverts slightly if at all rufescent. (*Automolus pallidigularis*.)
- c. Coloration slightly darker above (back deep olive-brown); chest indistinctly flammulated with pale buffy. (Eastern Panamá; Colombia?; Ecuador?)  
**Automolus pallidigularis pallidigularis** (p. 220).
- cc. Coloration slightly paler above (back lighter and more olivaceous brown); chest uniform pale buffy grayish brown. (Western Panamá and western Costa Rica.).....**Automolus pallidigularis exsertus** (p. 221).

<sup>a</sup> *Automolus rufpectus* Bangs, Proc. Biol. Soc. Wash., xii, Aug. 10, 1898, 158 (Puebla Vieja, Santa Marta, Colombia; coll. E. A. and O. Bangs); xiii, 1899, 99 (Santa Marta, 3,000–7,500 ft.).

<sup>b</sup> This probably requires subdivision within the geographic area indicated.



## AUTOMOLUS RUBIGINOSUS (Sclater).

## RUDDY AUTOMOLUS.

*Adults (sexes alike).*—Pileum and hindneck uniform dark chestnut-brown or vandyke brown; back, scapulars, and rump plain deep tawny-brown or mummy brown, the wings similar but more rufescent (nearly burnt umber); upper tail-coverts rufous-chestnut, tail chestnut; sides of head chestnut or brownish chestnut, the auricular region more grayish; chin, throat, and chest deep cinnamon-rufous; rest of under parts cinnamon-tawny or dull tawny-ochraceous medially, passing into deep raw-umber or light mummy brown on sides and flanks and into light chestnut or cinnamon-rufous on under tail-coverts; under wing-coverts uniform cinnamon-rufous, the inner webs of remiges broadly edged with vinaceous-cinnamon; maxilla brown, darker toward culmen; maxilla pale dull yellowish (in dried skins) with a stripe of pale brown along upper portion; legs and feet light horn color (in dried skins).

*Adult male.*—Length (skins), 199–225 (212); wing, 95.5–97.5 (96.5); tail, 90.5; culmen, 23–23.5 (23.2); tarsus, 26–27 (26.5); middle toe, 20.5–21 (20.7).<sup>a</sup>

Southeastern Mexico, in State of Vera Cruz (Córdova; Jalapa; Coátepec; Uvero).

*Anabates rubiginosus* SCLATER, Proc. Zool. Soc. Lond., 1856 (pub. Jan. 26, 1857), 288 (Córdova, Vera Cruz, Mexico; coll. P. L. Sclater); 1859, 365 (Jalapa, Vera Cruz).—SUMICHRAST, Mem. Bost. Soc. N. H., i, 1869, 555 (tierra caliente of Vera Cruz, up to 1,300 m.).—SANCHEZ, Anal. Mus. Nac. Mexico, i, 1877, 97 (Vera Cruz).

*Automolus rubiginosus* SCLATER, Cat. Am. Birds, 1862, 157 (Córdova); Cat. Birds Brit. Mus., xv, 1890, 91, part (Mexico).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1891, 155 (Córdova, Jalapa, Coátepec, and Uvero, Vera Cruz).—CHAPMAN, Bull. Am. Mus. N. H., x, 1898, 32 (Jalapa, Vera Cruz).

[*Automolus*] *rubiginosus* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 65, part.—SHARPE, Hand-list, iii, 1901, 66.

[*Philydor*] *rubiginosus* GRAY, Hand-list, i, 1869, 172, no. 2323.

## AUTOMOLUS VERÆPACIS VERÆPACIS Salvin and Godman.

## VERA PAZ AUTOMOLUS.

Similar to *A. rubiginosus* in coloration of upper parts, but under parts much paler, the chin, throat, and chest tawny-ochraceous instead of deep cinnamon-rufous; wing shorter, bill longer.

*Adults (sexes alike).*—Pileum and hindneck dark chestnut-brown, sometimes a little lighter or brighter on forehead; back, scapulars, and rump tawny-brown or mummy brown, the wings more rufescent brown (between russet and burnt umber); upper tail-coverts and tail clear chestnut or rufous-chestnut; sides of head deep chestnut-

<sup>a</sup> Two specimens.

brown passing into chestnut on malar region, the auricular region tinged with grayish and with indistinct shaft-streaks of paler; chin, throat, and chest deep tawny-ochraceous; rest of under parts light tawny-ochraceous medially, passing into tawny-brown or tawny-olive on sides and flanks and into light chestnut or deep cinnamon-rufous on under tail-coverts; under wing-coverts uniform tawny-ochraceous, the inner webs of remiges broadly edged with pinkish tawny-ochraceous or yellowish vinaceous-cinnamon; maxilla dark horn brown, becoming paler toward tip; mandible light horn brown, the under portion (broadly) pale dull yellowish (in dried skins); legs and feet horn color (in dried skins).

*Adults*.—Length (skin), 215;<sup>a</sup> wing, 91–93 (92); tail, 82–86 (84.5); culmen, 24–25 (24.7); tarsus, 26–27.5 (27); middle toe, 20.5–22 (21.2).<sup>b</sup>

Highlands of central Guatemala (Cobán, Vera Paz).

*Anabates rubiginosus* (not of Sclater) SCLATER and SALVIN, Ibis, 1859, 5, 117 (Guatemala).

*Automolus rubiginosus* (not of Sclater, 1862) SALVIN, Cat. Strickland Coll., 1882, 337.—SCLATER, Cat. Birds Brit. Mus., xv, 1890, 91 (Cobán, Vera Paz, Guatemala).

[*Automolus*] *rubiginosus* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 65, part (Guatemala).

*Automolus veræpaci* SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, sig. 20, July, 1891, 156 (Cobán, Vera Paz, Guatemala; coll. Salvin and Godman).

[*Automolus*] *veræpaci* SHARPE, Hand-list, iii, 1901, 66.

#### AUTOMOLUS VERÆPACIS UMBRINUS (Salvin and Godman).

##### TAWNY AUTOMOLUS.

Similar to *A. v. veræpaci* but coloration lighter throughout, the throat and chest ochraceous instead of tawny-ochraceous.

*Adult female*.—Length (skin), 207; wing, 89; tail, 88; culmen, 24.5; tarsus, 27.5; middle toe, 21.5.<sup>c</sup>

Highlands of western Guatemala (Santa Maria, near Quezaltenango; Barranca Honda, Volcán de Fuego).

*Automolus rubiginosus* (not *Anabates rubiginosus* Sclater) SCLATER, Cat. Birds Brit. Mus., xv, 1890, 91, part (Savana Grande, Barranca Honda, Volcan de Agua, and Volcan de Fuego, Pacific side, Guatemala).

*Automolus umbrinus* SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, sig. 20, July, 1891, 157 (Santa Maria, near Quezaltenango, Pacific side, Guatemala; coll. Salvin and Godman).

[*Automolus*] *umbrinus* SHARPE, Hand-list, iii, 1901, 66.

<sup>a</sup> One specimen.

<sup>b</sup> Four specimens, with sex undetermined.

<sup>c</sup> One specimen, the only one of the form seen by me.

**AUTOMOLUS GUERRERENSIS** Salvin and Godman.**GUERRERO AUTOMOLUS.**

Most like *A. rubiginosus* but coloration of upper parts and under parts of body much paler, the back, etc., raw-umber brown instead of tawny-brown or mummy brown, the pileum concolor with back instead of decidedly darker.

*Adults (sexes alike).*—Pileum, hindneck, back, scapulars, and rump plain raw-umber brown, passing into cinnamon-rufous on upper tail-coverts; tail clear rufous-chestnut; wings more rufescent than color of back, etc., sometimes rufous-brown or russet, the secondaries and proximal greater coverts sometimes nearly concolor with back; sides of head nearly concolor with pileum but rather more rufescent, especially on supra-auricular region, the auricular region rather duller or more grayish brown, with very narrow and indistinct shaft-streaks of paler; malar region, sides of neck, chest, and throat plain dull cinnamon-rufous or tawny-rufous, the chin (sometimes upper throat also) paler (more tawny-ochraceous or ochraceous-buff); abdomen and median portion of breast deep buff or clay color, shading into light raw-umber or tawny-olive on sides of breast, sides, and flanks, the under tail-coverts more rufescent (shorter coverts cinnamon, passing into russet or rufous-tawny on the longer ones); axillars and under wing-coverts clear buff-tawny, the inner webs of remiges with basal half or more similar but slightly paler; maxilla dark horn color becoming paler toward tomium, darker on basal portion of culmen; mandible horn color, the lower portion (broadly) pale dull yellowish (in dried skins); legs and feet horn color (in dried skins).

*Adult male.*—Length (skins), 203–213 (206); wing, 91.5–95 (93.2); tail, 83–84 (83.3); culmen, 23.5–24 (23.8); tarsus, 26–27.5 (26.5); middle toe, 21.5–22 (21.7).<sup>a</sup>

*Adult female.*—Length (skin), 212; wing, 88; tail, 80; culmen, 23; tarsus, 25.5; middle toe, 20.<sup>b</sup>

Mountains of southwestern Mexico, in States of Guerrero (Omiteme) and western Oaxaca (Pluma).

*Automolus guerrensis* SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, sig. 20, July, 1891, 157 (Omiteme, Guerrero, s. w. Mexico; coll. Salvin and Godman).

[*Automolus*] *guerrensis* SHARPE, Hand-list, iii, 1901, 66.

*Automolus pectoralis* NELSON, Auk, xiv, Jan., 1897, 54 (Pluma, Oaxaca, s. w. Mexico; coll. U. S. Nat. Mus.).

**AUTOMOLUS FUMOSUS** Salvin and Godman.**SOOTY AUTOMOLUS.**

Above deep smoke brown, pileum darker, rump deep rufescent ("saturate rubiginoso"), tail darker; wings externally concolor

<sup>a</sup> Three specimens.

<sup>b</sup> One specimen.



with back; under parts fawn color ("cervino-brunneus"), throat and breast more rufescent, flanks smoke brown, under tail-coverts rufescent ("rubiginosis"), under wing-coverts cinnamon; bill and feet dusky hazel ("corylinus"), the mandible paler beneath. Total length [adult male] 8.0 [inches=201 mm.], wing 3.25 [=82.5 mm.], tail, middle rectrices, 3.1 [78.5 mm.], lateral rectrices, 2.25 [57 mm.], bill to rictus, 1.5 [38 mm.], tarsus, 1.1 [28 mm.]. (Translation of original description.)

This species, of which only one example is known, is said to be 'the darkest of all the forms of *Automolus*, darker even than *A. rubiginosus*, and has much darker wings. On the underside it is more like the Guatemalan *A. umbrinus*, but the sides of the head and the flanks are much darker and the wings outwardly very differently coloured.'

Western Panamá (Bibaláz, Volcán de Chiriquí).

*Automolus cervinigularis* (not *Anabates cervinigularis* Sclater) SCLATER, Cat. Birds Brit. Mus., xv, 1890, 91, part (spec. n., Bibaláz, Chiriquí).

*Automolus fumosus* SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, sig. 20, July, 1891, 158 (Bibaláz, Chiriquí, Panamá; coll. Salvin and Godman). [*Automolus*] *fumosus* SHARPE, Hand-list, iii, 1901, 66.

#### AUTOMOLUS CERVINIGULARIS CERVINIGULARIS (Sclater).

##### BUFF-THROATED AUTOMOLUS.

*Adults (sexes alike).*—Pileum and hindneck deep sooty brown or dark sepia, the forehead paler; back, scapulars, and upper rump plain warm-sepia or deep olive-brown, the wings similar but more russet or chestnut brown, the outer webs of primaries more or less paler; lower rump, upper tail-coverts, and tail chestnut; loreal region, a distinct though narrow superciliary stripe, suborbital region, lower portion of auricular region, anterior portion of sides of neck, chin, and throat, deep buff or ochraceous-buff; upper portion of auricular region dark sooty brown, forming a conspicuous postocular stripe; median portion of chest and breast, together with abdomen, dull grayish buff, passing laterally into olive-brown or raw-umber on sides and flanks and into cinnamon-rufous on under tail-coverts; feathers of upper chest (sometimes those of sides of neck and sides of lower throat also) more or less distinctly margined with olive-brown or dusky; under wing-coverts and broad edgings to inner webs of remiges ochraceous-buff; maxilla horn color (more or less dark) more blackish basally and on culmen; mandible pale brownish or dull whitish (in dried skins), darker terminally, especially along tomtia; iris brown; legs and feet horn color (in dried skins).

*Young.*—Similar to adults but texture of plumage different.

*Adult male*.—Length (skins), 171–192 (185); wing, 84–95 (90.9); tail, 66.5–85.5 (73); culmen, 22.5–25.5 (24.1); tarsus, 22.5–25.5 (23.9); middle toe, 17.5–20 (19).<sup>a</sup>

*Adult female*.—Length (skins), 176–193 (185); wing, 82.5–93 (88.1); tail, 66–80 (73.5); culmen, 22.5–25 (23.4); tarsus, 22–25 (22.7); middle toe, 16.5–19.5 (18.8).<sup>b</sup>

Southeastern Mexico, in States of Vera Cruz (Córdova; Playa Vicente; Omealca; Atoyác; Orizaba; Miradór; Buena Vista), Mexico (near City of Mexico)?, Oaxaca (mountains near Santo Domingo), and Tabasco (Teapa), and southward through Guatemala (Cobán; sources of Rio de la Pasión; Choctúm), British Honduras (Manatee Lagoon; near Soldier Creek; near Quamius Creek; Toledo District) and Honduras (Santa Ana; Yaruca) to eastern Nicaragua (Los Sábalos; Rio Escondido).

*Anabates cervinularis* SCLATER, Proc. Zool. Soc. Lond., 1856 (pub. Jan. 26, 1857), 288 (Córdova, Vera Cruz, Mexico; coll. A. Sallé); 1859, 382 (Playa Vicente, Vera Cruz).—SALVIN and SCLATER, Ibis, 1860, 35 (Cobán, Guatemala).

*Automolus cervinularis* SCLATER, Cat. Am. Birds, 1862, 158 (Córdova); Proc. Zool. Soc. Lond., 1864, 175 (City of Mexico); Cat. Birds Brit. Mus., xv, 1890, 91, part (Córdova; near City of Mexico; sources Rio de la Pasión, and Choctúm, Guatemala; Honduras).—SUMICHRIST, Mem. Bost. Soc. N. H., i, 1869, 555 (tierra caliente of Vera Cruz); La Naturaleza, v, 1881, 247 (Omealca, Vera Cruz).—BOUCARD, Ann. Soc. Linn. Lyon, 1878, 37 (Guatemala).—SANCHEZ, Anal. Mus. Nac. Mex., i, 1877, 97 (Vera Cruz).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1891, 158, part (Atoyác, Vera Cruz; Chim-

<sup>a</sup> Fifteen specimens.

<sup>b</sup> Seventeen specimens.

| Locality.                                                         | Wing. | Tail. | Culmen. | Tarsus. | Middle toe. |
|-------------------------------------------------------------------|-------|-------|---------|---------|-------------|
| MALES.                                                            |       |       |         |         |             |
| Nine adult males from southeastern Mexico.....                    | 92.4  | 73    | 24.4    | 24.1    | 19.3        |
| Four adult males from British Honduras.....                       | 89.7  | 75.5  | 23.7    | 24      | 18.7        |
| One adult male from Honduras.....                                 | 88.5  | 70    | 24      | 23      | 19          |
| One adult male from Nicaragua.....                                | 84.5  | 66.5  | 22.5    | 23      | 18          |
| Ten adult males ( <i>A. c. hypophæus</i> ) from Costa Rica.....   | 91.7  | 72.9  | 23.6    | 23.2    | 18.8        |
| FEMALES.                                                          |       |       |         |         |             |
| Nine adult females from southeastern Mexico.....                  | 89.1  | 74.8  | 23.6    | 23.1    | 19.5        |
| Four adult females from British Honduras.....                     | 86.2  | 73.6  | 23.1    | 23.4    | 18          |
| Three adult females from Honduras.....                            | 89.5  | 73.7  | 22.8    | 23.7    | 18.5        |
| One adult female from Nicaragua.....                              | 82.5  | 66    | 23.5    | 23      | 16.5        |
| Ten adult females ( <i>A. c. hypophæus</i> ) from Costa Rica..... | 85.3  | 69.6  | 22.8    | 23.3    | 18          |

Mexican specimens average decidedly deeper in color than others, especially the buff of superciliary stripe, throat, etc., and brown of pileum, the latter almost sooty in its darkness. Guatemalan examples have the back, etc., more rufescent or castaneous, those from Honduras, British Honduras, and Nicaragua more olivaceous than Mexican specimens. The series examined is, however, inadequate.

alapa, Oaxaca; Cobán and Choctum, Guatemala).—BANGS, Bull. Mus. Comp. Zool., xxxix, 1903, 150 (Yaruca, Honduras).

[*Automolus cervinigularis* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 65, part.—SHARPE, Hand-List, iii, 1901, 67, part.

[*Ipoborus*] *cervinigularis* HEINE and REICHENOW, Nomencl. Mus. Hein. Orn., 1890, 134 (Mexico).

[*Philydor*] *cervinigularis* GRAY, Hand-list, i, 1869, 172, no. 2321.

*Automolus pallidigularis* (not of Lawrence) NUTTING, Proc. U. S. Nat. Mus., vi, 1884, 404 (Los Sábalos, Nicaragua).—RIDGWAY, Proc. U. S. Nat. Mus., xiv, 1891, 471 (Santa Ana, Honduras).—RICHMOND, Proc. U. S. Nat. Mus., xvi, 1893, 497 (Rio Escondido, Nicaragua; habits; crit.).

### AUTOMOLUS CERVINIGULARIS HYPOPHÆUS Ridgway.

#### DARK-BREASTED AUTOMOLUS.

Similar to *A. c. cervinigularis* but coloration decidedly darker, especially under parts of the body, which are isabella color medially darkening laterally into deep buffy olive, contrasting strongly and abruptly with the buff or ochraceous-buff of chin and throat.

*Adult male*.—Length (skins), 168–189 (181); wing, 88–94 (91.7); tail, 70–76.5 (72.9); culmen, 22–25 (23.6); tarsus, 22.5–25 (23.2); middle toe, 18–20 (18.8).<sup>a</sup>

*Adult female*.—Length (skins), 167–185 (176); wing, 83.5–89 (85.3); tail, 64.5–75 (69.6); culmen, 21.5–24 (22.8); tarsus, 22–24 (23.3); middle toe, 17.5–19.5 (18).<sup>a</sup>

Caribbean slope of Costa Rica (Angostura; Sipúrio; Talamanca; Rio Sicsola; Pacuare; Rio Reventazón; Jiménez; Carrillo; Tucurríqui; La Balsa; Guayabo; Guápiles; Cuábre; El Hogár; Peralta; Turrialba; Cariblanco de Sarapiquí; La Vijagua); western Panamá (Santa Fé de Veragua; Boquete de Chitra)?

*Automolus cervinigularis* (not *Anabates cervinigularis* Sclater) SALVIN, Proc. Zool. Soc. Lond., 1867, 143 (Santa Fé de Veragua, Panamá).—LAWRENCE, Ann. Lyc. N. Y., viii, 1868, 106 (Angostura, Costa Rica).—FRANTZIUS, Journ. für Orn., 1869, 304 (Costa Rica).—ZELEDÓN, Anal. Mus. Nac. Costa Rica, i, 1887, 113, part (Rio Sicio and Jiménez, Costa Rica).—SCLATER, Cat. Birds Brit. Mus., xv, 1890, 91, part (Tucurríqui and La Balsa, Costa Rica; Santa Fé de Veragua, except specimen *n.*).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1891, 158, part (Tucurríqui, Angostura, and La Balsa, Costa Rica; Boquete de Chitra and Santa Fé de Veragua, Panamá).

[*Automolus*] *cervinigularis* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 65, part.—SHARPE, Hand-list, iii, 1901, 67, part.

*Automolus cervinigularis hypophæus* RIDGWAY, Proc. Biol. Soc. Wash., xxii, April 17, 1909, 72 (Rio Reventazón at Guayabo Station, Costa Rica; coll. U. S. Nat. Mus.).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 640 (Caribbean lowlands of Costa Rica, up to about 2,000 ft.; habits; descr. nest and eggs).—FERRY, Pub. 146, Field Mus. N. H., orn. ser., i, no. 6, 1910, 270 (Guayabo, Costa Rica).

<sup>a</sup> Ten specimens.



**AUTOMOLUS PALLIDIGULARIS PALLIDIGULARIS** Lawrence.**PALE-THROATED AUTOMOLUS.**

Somewhat like *A. cervinigularis* but superciliary stripe much less distinct (the supra-auricular portion more or less obsolete), general coloration paler, feathers of chest without darker margins, and size smaller.

*Adults (sexes alike).*—Pileum and hindneck sepia brown, paler on forehead, where the feathers have indistinct narrow mesial streaks or shaft-streaks of brownish buffy; back and scapulars plain deep olive-brown, passing into chestnut on lower rump, tail-coverts, and tail and into deep russet-brown or prouts brown on wings, this passing into dusky on tips of remiges and primary coverts; an indistinct narrow superciliary stripe of brownish buff, becoming obsolete above posterior portion of auricular region; auricular and suborbital regions sepia brown, with indistinct shaft-streaks of dull buffy; malar region, chin, and throat immaculate pale dull cream buff; rest of under parts light wood brown medially, passing laterally into tawny-olive or raw-umber on sides and flanks and into light chestnut or tawny on under tail-coverts, the chest with median portion of feathers pale cream buffy, producing an indistinctly flammulated effect; under wing-coverts and broad edgings to inner webs of remiges ochraceous-buff; maxilla horn color, the upper-basal portion dusky or blackish; mandible horn color with lower-basal portion dull whitish (in dried skins); legs and feet horn color (in dried skins).

*Young.*—Similar to adults but texture of plumage very different and feathers of lower throat narrowly margined terminally with dusky.

*Adult male.*—Length (skin), 188; wing, 85.5; tail, 70.5; tarsus, 21; middle toe, 19.<sup>a</sup>

*Adult female.*—Length (skin), 176.5; wing, 87; tail, 75; culmen, 22; tarsus, 22.5; middle toe, 16.5.<sup>a</sup>

Eastern Panamá (Panamá; Lion Hill); Colombia (Remédios, Antioquia) ?<sup>b</sup> Ecuador ?<sup>b</sup>

*Anabates cervinigularis* (not of Sclater) LAWRENCE, Ann. Lyc. N. Y., vii, 1862, 294 (Lion Hill Station, Panamá).

*Anabates ochrolæmus* (not of Tschudi) LAWRENCE, Ann. Lyc. N. Y., vii, 1862, 319 (Lion Hill).

*Automolus pallidigularis* LAWRENCE, Ann. Lyc. Nat. Hist. N. Y., vii, 1862, 465 (Lion Hill Station, Panamá; coll. G. N. Lawrence).—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1864, 354 (Lion Hill; crit.); (?) 1879, 522 (Remédios, Antioquia, Colombia).—SCLATER, Cat. Birds Brit. Mus., xv, 1890, 94, part (Panamá; Remédios, Colombia?).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1891, 159, part (Lion Hill, Panamá; Colombia?).—BANGS, Proc. New Engl. Zool. Club, ii, 1900, 26 (Loma del León, Panamá).

<sup>a</sup> One specimen.

<sup>b</sup> I have seen specimens from Panamá (Lion Hill) only.

- [*Automolus pallidigularis* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 65, part.—SHARPE, Hand-list, iii, 1901, 67, part (Panamá; Colombia?).]  
 [*Philydor pallidigularis* GRAY, Hand-list, i, 1869, 173, no. 2328, part.]

### AUTOMOLUS PALLIDIGULARIS EXSERTUS (Bangs).

#### CHIRIQUÍ AUTOMOLUS.

Similar to *A. p. pallidigularis* but slightly larger, with relatively longer bill, color of back, etc., more olivaceous, chest uniform in color, and buff of throat, etc., deeper.

*Adult male*.—Length (skins), 158–186 (174); wing, 85–93 (88.6); tail, 69–76.5 (72.4); culmen, 20.5–24 (22.6); tarsus, 22–23.5 (22.7); middle toe, 17–18.5 (17.9).<sup>a</sup>

*Adult female*.—Length (skins), 161–180 (174); wing, 85–94 (89); tail, 66.5–77 (71.7); culmen, 21–24 (22.5); tarsus, 21.5–23.5 (22.7); middle toe, 17–18.5 (17.9).<sup>b</sup>

Pacific slope of Costa Rica (Cartago; Boruca; Guaitíl; Pozo del Rio Grande; Pozo del Pitál; Pozo Azul de Pirris; El Pozo de Térraba; Térraba; Buenos Aires; El General) and western Panamá (Divala; Calobre; Boquete de Chitra; Bugaba; El Banco).

*Automolus pallidigularis* (not of Lawrence, 1862) LAWRENCE, Ann. Lyc. N. Y., ix, 1868, 106, part (Guaitíl, and Cartago, Costa Rica).—FRANTZIUS, Journ. für Orn., 1869, 304 (Costa Rica).—SALVIN, Proc. Zool. Soc. Lond., 1870, 192 (Boquete de Chitra and Bugaba, Panamá).—SCLATER, Cat. Birds Brit. Mus., xv, 1890, 94, part (Costa Rica; Bugaba and Boquete de Chitra, Panamá).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1891, 159, part (Guaitíl, and Angostura, Costa Rica; Bugaba, Boquete de Chitra, and Calobre, Panamá).—CHERRIE, Expl. Zool. Merid. Costa Rica, 1893, 38 (Boruca, Térraba, and Buenos Aires, Costa Rica); Anal. Inst. Fis.-Geog. Costa Rica, vi, 1893, 16 (Pozo del Pitál, Costa Rica; crit.).

[*Automolus pallidigularis* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 65, part.—SHARPE, Hand-list, iii, 1901, 67, part.]

[*Philydor pallidigularis* GRAY, Hand-list, i, 1869, 173, no. 2328, part.]

*Automolus exsertus* BANGS, Auk, xviii, Oct., 1901, 367 (Divala, Chiriquí, Panamá; coll. E. A. and O. Bangs); xxiv, 1907, 299 (Boruca, Lagarto, and Pozo del Rio Grande, s. w. Costa Rica).

<sup>a</sup> Eleven specimens.

<sup>b</sup> Seventeen specimens.

| Locality.                                                  | Wing. | Tail. | Culmen. | Tarsus. | Middle toe. |
|------------------------------------------------------------|-------|-------|---------|---------|-------------|
| MALES.                                                     |       |       |         |         |             |
| Ten adult males from Costa Rica.....                       | 88.6  | 72.4  | 22.6    | 22.7    | 17.9        |
| One adult male from western Panamá (Divala, Chiriquí)..... | 91.5  | 76    | 23      | 23.5    | 18          |
| FEMALES.                                                   |       |       |         |         |             |
| Ten adult females from Costa Rica.....                     | 88.5  | 70.9  | 22.2    | 22.5    | 17.8        |
| Seven adult females from western Panamá (Chiriquí).....    | 89.7  | 72.9  | 23.1    | 23.1    | 18          |

(?) *Automolus cervinigularis* (not *Anabates cervinigularis* Sclater?) ZELEDÓN, Anal. Mus. Nac. Costa Rica, i, 1888, 113, part (Cartago, Costa Rica).

*Automolus cervinigularis exsertus* CARRIKER, Ann. Carnegie Mus., vi, 1910, 641 (s. w. Costa Rica; crit.).

### Genus RHOPCOTITES Ridgway.

*Rhopcotes*<sup>a</sup> RIDGWAY, Proc. Biol. Soc. Wash., xxii, April 17, 1909, 72. (Type, *Philydor rufo-brunneus* Lawrence.)

Medium sized to large Furnariidæ (length about 165–210 mm.) somewhat resembling the genus *Automolus* but with much stouter, less compressed, and distinctly uncinuate bill, culmen decidedly shorter than tarsus, rigid and protruding shafts to rectrices, and streaked coloration.

Bill nearly as long as head, stout, moderately compressed, its width at loral antiæ decidedly less than its depth at same point and contained slightly more than twice to about two and a half times in distance from nostril to tip of maxilla; culmen decidedly shorter than tarsus, distinctly ridged, nearly straight for basal half (more or less) strongly decurved terminally, the tip of maxilla distinctly uncinuate; tomia nearly straight but slightly though distinctly decurved terminally, without trace of notch; gonys convex and rather prominent basally, ascending terminally, the tip sometimes faintly decurved. Nostril exposed, posteriorly in contact with loral feathering, roundish or broadly oval, nonoperculate but margined above by a very narrow membranous rim. Rictal bristles absent, and feathers of chin, etc., without terminal setæ. Wing moderate, much rounded, the longest primaries exceeding secondaries by less than distance from nostril to tip of maxilla; sixth and seventh, or fifth, sixth, and seventh, primaries longest, the tenth (outermost) about two-thirds as long as the longest, the ninth about as long as secondaries. Tail about as long as wing (decidedly shorter in *R. ignobilis*?<sup>b</sup>), graduated for about one-third its length, the rectrices (12) rather loosely webbed or semi-decomposed, with rigid and protruded shafts. Tarsus longer than culmen, about one-third as long as wing, rather stout, distinctly scutellate; middle toe, with claw, slightly shorter than tarsus; outer toe, without claw, reaching to about middle of subterminal phalanx of middle toe, the inner toe slightly shorter; hallux about as long as inner toe but much stouter;

<sup>a</sup> Ρώψ (ῥωπός), bush, underwood, brushwood; κτήης, a colonist, inhabitant.

<sup>b</sup> In the only specimen of *Automolus ignobilis* Sclater and Salvin available for comparison, the tips of the rectrices are so much worn that the real length of the tail can not be ascertained.



basal phalanx of middle toe united for more than half its length to lateral toes; claws moderate to rather large, strongly curved, that of hallux decidedly shorter than the digit.

*Coloration*.—Above brown, usually darker and duller (sometimes more grayish) on pileum and hindneck, the tail and upper tail-coverts chestnut or chestnut-brown; under parts brown or olive, more or less distinctly streaked with tawny, ochraceous, or buffy—the pileum and hindneck, or even the back, sometimes similarly streaked. Sexes alike.

*Nidification*.—Unknown?

*Range*.—Costa Rica to Ecuador (to Peru, Bolivia, and southeastern Brazil? <sup>a</sup>). (Several species. <sup>a</sup>)

### RHOPOCTITES RUFOBRUNNEUS (Lawrence).

#### STREAKED AUTOMOLUS.

*Adults (sexes alike)*.—Pileum and hindneck dark grayish brown or brownish gray, the feathers margined with blackish; back, scapulars, and wings deep warm-sepia or mummy brown, passing into chestnut on lower rump, upper tail-coverts, and tail, the shafts of rectrices much darker; lores mixed dusky and grayish; suborbital and auricular regions streaked with dusky and dull ochraceous or light brownish; malar region, sides of neck (anteriorly), chin, and throat ochraceous (more or less deep), the feathers more or less distinctly edged or narrowly margined with dusky olive or blackish; rest of under parts light tawny-olive, more olive on chest, where more or less broadly streaked with ochraceous, usually more ochraceous on abdomen, the under tail-coverts more rufescent; under wing-coverts tawny-ochraceous, the inner webs of remiges broadly edged with pale ochraceous-buff or deep pinkish buff; bill black, the mandible usually brownish basally; legs and feet horn color (in dried skins).

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<sup>a</sup> The above diagnosis and description are based exclusively on *Philydor rufo-brunneus* Lawrence and *Automolus ignobilis* Sclater and Salvin, but several other species referred to *Automolus* by Sclater and others seem to be nearly related and perhaps are—some of them at least—congeneric. These are: *Automolus ferruginolentus* (Maximilian), *A. holostictus* Sclater and Salvin, *A. striaticeps* Taczanowski, *A. subulatus* (Spix) and *A. stictoptilus* (Cabanis), none of which have been examined by me.

*Rhopoctites ignobilis* differs considerably from *R. rufo-brunneus* (type of the genus) in shorter, deeper, and relatively more compressed bill, and, apparently, in relatively shorter tail; but the differences are within the usual normal limits of variation.

*Adult male*.—Length (skins), 195–218 (207); wing, 87–100 (92.6); tail, 82–92.5 (88.9); culmen, 22–25.5 (23.6); tarsus, 25.5–29 (27.5); middle toe, 20–22.5 (21).<sup>a</sup>

*Adult female*.—Length (skins), 186–217 (202); wing, 85.5–92 (88.9); tail, 83.5–91 (86.9); culmen, 23–24.5 (23.7); tarsus, 26.5–29 (27.9); middle toe, 20–22 (21.1).<sup>b</sup>

Costa Rica (Barranca; Navarro, La Estrella, and Azahár, Cartago; Faldas de Irazú; Escazú; San José; La Hondura; Carrillo; Coliblanco; Ojuras de Térraba; Los Reyes, Santa Maria de Dota) and western Panamá (Boquete, 4,500–6,000 ft., Volcán de Chiriquí, and Caribbean slope, Chiriquí).

*Philydor rufobrunneus* LAWRENCE, Ann. Lyc. Nat. Hist. N. Y., viii, 1867, 127 (San José, Costa Rica; coll. U. S. Nat. Mus.); ix, 1868, 106 (San José and Barranca, Costa Rica).—FRANTZIUS, Journ. für Orn., 1869, 304 (Costa Rica).—BERLEPSCH, Proc. U. S. Nat. Mus., xi, 1888, 565 (crit.; diagnosis).

*Philydor rufo-brunneus* BOUCARD, Proc. Zool. Soc. Lond., 1878, 59 (Navarro, Costa Rica).

[*Philydor*] *rufobrunneus* GRAY, Hand-list, i, 1869, 172, no. 2316.

*Automolus rufo-brunneus* SCLATER, Cat. Birds Brit. Mus., xv, 1890, 89 (Irazú distr., Costa Rica).

*Automolus rufobrunneus* SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1891, 154, pl. 46, fig. 2 (*Philydor rufobrunneus* on plate).—BANGS, Proc. New Engl. Zool. Club, iii, 1902, 44 (Boquete and Volcán de Chiriquí, 4,500–7,700 ft., Panamá).

*Rhopoetites rufo-brunneus* CARRIKER, Ann. Carnegie Mus., vi, 1910, 638 (Costa Rica; habits).

## Family DENDROCOLAPTIDÆ.

### THE WOODHEWERS.

>*Dendrocolaptinae* CABANIS, Wiegmann's Archiv für Naturg., 1847, pt. i, 339 (includes *Sclerurus*).—BONAPARTE, Cons. Av., i, 1850, 206.—SUNDEVALL, Met. Nat. Av. Disp. Tent., ii, 1872, 56 (English translation, 1889, 123).

=*Dendrocolaptinae* CABANIS and HEINE, Mus. Hein., ii, 1860, 33.—SCLATER, Cat. Am. Birds, 1862, 160.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 66.—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1891, 146, 176.

>*Dendrocolaptidae* BONAPARTE, Cons. Av., i, 1850, 206 (includes *Sclerurus*).—SCLATER, Cat. Am. Birds, 1862, 146 (includes Furnariidae and Oxyruncidae!).—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 66 (includes Furna-

<sup>a</sup> Fifteen specimens.

<sup>b</sup> Eight specimens.

| Locality.                                             | Wing. | Tail. | Culmen. | Tarsus. | Middle toe. |
|-------------------------------------------------------|-------|-------|---------|---------|-------------|
| MALES.                                                |       |       |         |         |             |
| Ten adult males from Costa Rica.....                  | 92.5  | 87.6  | 23.2    | 27.3    | 20.8        |
| Five adult males from western Panamá (Chiriquí).....  | 92.8  | 91.2  | 24.4    | 27.7    | 21.4        |
| FEMALES.                                              |       |       |         |         |             |
| Six adult females from Costa Rica.....                | 88.6  | 85.6  | 23.7    | 27.7    | 20.9        |
| Two adult females from western Panamá (Chiriquí)..... | 90    | 90    | 23.5    | 28.2    | 21.5        |

riidæ).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1891, 145 (includes Furnariidæ).

= *Dendrocolaptidæ* GARROD, Proc. Zool. Soc. Lond., 1877, 452.—STEJNEGER, Stand. Nat. Hist., iv, 1885, 478, in text.

Tracheophone Mesomyodian Passeres with the metasternum 2-notched, interorbital septum imperforate, postorbital process small, maxillo-palatines short and broad (crossing posterior end of the olfactory fossa and terminating immediately in front of the descending plate of the palatine), vomer short, tensor patagii brevis tendon typically passerine, nares usually holorhinal (but occasionally schizorhinal); syrinx tracheal, with two pairs of short tracheo-bronchial muscles, palate compound ægithognathous or semi-desmognathous (the palatines fused at anterior end and with the internasal septum); mesorhinium normal; tarsal envelope endaspidean; outer toe about as long as middle toe (much longer than inner toe), the three anterior toes united for full length of the basal phalanx; the middle adherent to the outer by nearly, if not quite, the full length of the second phalanx also; hallux (without claw) shorter than inner toe (without claw).

Like the allied Furnariidæ the Dendrocolaptidæ are peculiar to the continental portions of the Neotropical Region, but unlike the latter they belong almost exclusively to the intertropical portions, and are, proportionally, better developed in the Central American district. The family is far less numerous and varied, however, than the Furnariidæ, consisting of only about 14 genera and 127 species, or considerably less than half as many as are contained in the allied family.

The Dendrocolaptidæ are more arboreal than the Furnariidæ, all being distinctly "scansorial," while comparatively few of the Furnariidæ are thus adapted. They represent and more or less resemble, superficially, the Woodpeckers (Picidæ) and Tree-Creepers (Certhiidæ), more especially the latter, most of the species having similarly curved and compressed bills, a more or less varied brownish coloration, and lengthened, graduated, and stiff-pointed tails. Like the Certhiidæ and unlike the Picidæ they have three toes in front and one behind, but the former, instead of being cleft to the base are united for the length of their first and second phalanges; and the middle toe, instead of being much longer than the outer one, barely, or not at all exceeds the latter in length. Like the Woodpeckers, however, and unlike the Creepers, the Woodhewers have the habit of loudly tapping or hammering on the trunks and branches of trees. Some genera have the bill enormously developed as to length and greatly curved, sometimes in the shape of a bow—a modification evidently adapted to the purpose of probing the burrows of wood-boring insects. In others the bill is straight and quite woodpecker-



like in form, though without a chisel-shaped tip and well adapted to hammering or chipping the decayed wood, as in the case of the Woodpeckers. In size the Dendrocolaptidæ vary from the dimensions of a true Creeper (*Certhia*) to those of a Flicker (*Colaptes*). There is little range in the variety of their coloration, rufous or chestnut and olivaceous hues prevailing throughout the group, often unvaried but sometimes relieved by streaks or bars of darker and lighter hues.

The family as properly restricted is equal to the "Subfamily *Dendrocolaptinæ*" of Dr. Sclater,<sup>a</sup> minus the genera *Margarornis* and *Pygarrhicus*, which belong to the Furnariidæ, and plus the genera *Glyphorhynchus* and *Dendroornis*, which constitute Dr. Sclater's "Subfamily Glyphorhynchinæ."

KEY TO THE GENERA OF DENDROCOLAPTIDÆ.<sup>b</sup>

- a. Nostril roundish, without distinct operculum. (*Dendrocolaptinæ*.)
- b. Bill moderately elongated (much less than twice as long as tarsus) or rather short.
- c. Bill depressed (at least as broad as deep at nostril); maxillary tomium more or less distinctly notched subterminally. (*Dendrocolaptæ*.)
- d. Bill relatively short and stout, the distance from nostril to tip of maxilla not greater than length of tarsus, its depth at nostril equal to one-third the length of exposed culmen and nearly half the distance from nostril to tip of maxilla.....*Dendrexetastes* (extralimital).<sup>c</sup>
- dd. Bill relatively longer and more slender, the distance from nostril to tip of maxilla greater than length of tarsus, its depth at nostril less than one-fourth the length of exposed culmen and less than one-third the distance from nostril to tip of maxilla.....*Dendrocolaptes* (p. 227).
- cc. Bill compressed (much deeper than broad at nostril); maxillary tomium without trace of subterminal notch. (*Xiphocolaptæ*.)
- d. Bill straight.....*Dendroplex* (extralimital).<sup>d</sup>
- dd. Bill more or less decurved.
- e. Larger (wing 120-152 mm.); bill relatively shorter and deeper, with gonydeal angle more prominent and base of gonys with a narrow but distinct median ridge.....*Xiphocolaptes* (p. 235.)
- ee. Smaller (wing less—usually much less—than 120 mm.); bill relatively longer and less deep, with tip of maxilla more decidedly decurved, gonydeal angle less prominent, and base of gonys without median ridge.
- f. Bill nearly straight (only the tip of maxilla decidedly decurved), relatively much deeper (depth at nostril equal to nearly one-fourth to about one-third the distance from nostril to tip of maxilla).

*Xiphorhynchus* (p. 239).

<sup>a</sup> Catalogue of the Birds in the British Museum, vol. xv, 1890, pp. 117-175.

<sup>b</sup> The genus *Hylexetastes* Sclater (type, *Dendrocolaptes perrotii* Lafresnaye) I have not examined, and therefore is omitted.

<sup>c</sup> *Dendrexetastes* Eyton, in Jardine's Contr. Orn., 1851, 76. (Type, *D. capitoides* Eyton=*Dendrocolaptes temminckii* Lafresnaye.—*Cladoscopus* Reichenbach, Handb. Spec. Orn., 1853, 192. Type, *Dendrocolaptes temminckii* Lafresnaye. (Cayenne and upper Amazon Valley; two species.)

<sup>d</sup> *Dendroplex* Swainson, Zool. Journ., iii, 1827, 354. Type, *Oriolus picus* Gmelin. (Colombia and Venezuela to Bolivia, southeastern Brazil, and lower Amazon Valley; two species.)

*ff.* Bill decidedly though slightly decurved throughout, relatively more slender (depth at nostril not more than one-third the distance from nostril to tip of maxilla).....*Picolaptes* (p. 257).

*bb.* Bill excessively elongated (more than twice as long as tarsus).

*c.* Bill nearly straight, much stouter.....*Nasica* (extralimital).<sup>a</sup>

*cc.* Bill strongly arched or decurved, slender.....*Campylorhamphus* (p. 268).

*aa.* Nostril narrow, distinctly operculate. (*Glyphorhynchinae*.)

*b.* Bill long, slender, and distinctly (though not strongly) arched or decurved, conspicuously longer than head (about twice as long as tarsus); nasal operculum densely feathered; outer toe distinctly (though slightly) shorter than middle toe. (*Drymornithes*.).....*Drymornis* (extralimital).<sup>b</sup>

*bb.* Bill shorter than head or at least not distinctly longer, much less than twice as long as tarsus, not distinctly, if at all, decurved; nasal operculum naked; outer toe as long as middle toe.

*c.* Bill much shorter than head, the exposed culmen only about two-thirds as long as tarsus; inner webs of remiges crossed by a broad sub-basal band of ochraceous-buff.

*d.* Bill very stout, wedge-shaped, with tip of maxilla broad and flattened; nasal operculum very broad. (*Glyphorhynchæ*.)...*Glyphorhynchus* (p. 274).

*dd.* Bill slender, almost subulate, with tip of maxilla narrow, pointed, and slightly decurved; nasal operculum narrow. (*Sittasomæ*).

*Sittasomus* (p. 277).

*cc.* Bill nearly as long as head, the exposed culmen as long as (sometimes longer than) tarsus; inner webs of remiges without any cross-band, but uniform cinnamon-rufous (more or less deep) except terminally. (*Dendrocinclæ*.)

*d.* Tail as long as or longer than wing, graduated for half its length, the rectrices conspicuously acuminate and very strongly decurved subterminally (as in *Glyphorhynchus* and *Sittasomus*), the attenuated tips distinctly webbed throughout; bill more slender, relatively broader and more depressed basally.....*Deconychura* (p. 283).

*dd.* Tail decidedly shorter than wing, graduated for only one-third its length, the rectrices inconspicuously acuminate and not strongly decurved terminally or subterminally, the attenuated tips with shaft denuded or the barbs very short; bill stouter, relatively narrower and deeper basally.

*Dendrocincla* (p. 286).

### Genus DENDROCOLAPTES Hermann.

*Dendrocolaptes* HERMANN, Obs. Zool., 1804, 135. (Type, *Picus certhia* Boddaert.)

*Dendrocolaptes* (emendation) VOIGT, Thierreich, i, 1831, 624.

*Dendrocopus* VIEILLOT, Analyse, 1816, 45. (Type, *Talapiot* Buffon=*Picus certhia* Boddaert.)

*Dendrocops* SWAINSON, Classif. Birds, ii, 1837, 314. (Type, *Dendrocolaptes platyrostris* Spix=*Dendrocolaptes picumnus* Lichtenstein.)

*Orthocolaptes* LESSON, Rev. Zool., 1840, 267. (Type, *O. communis* Lesson=*Dendrocolaptes picumnus* Lichtenstein.)

*Premnopus*<sup>c</sup> CABANIS, in Wiegmann's Archiv für Naturg., xiii, pt. i, 1847, 339. (Type, *Picus certhia* Boddaert.)

<sup>a</sup> *Nasica* Lesson, Traité d'Orn., 1831, 311. Type, *N. nasalis* Lesson=*Dendrocopus longirostris* Vieillot. (Guianas and Amazon Valley; monotypic.)

<sup>b</sup> *Drymornis* Eyton, in Jardine's Contr. Orn., 1852, 23. Type, *Nasica bridgesii* Eyton. (Uruguay and northern Argentina; Bolivia?; monotypic.)

<sup>c</sup> "πρέμιον, Stamm; κόπτω, hacken." (Cabanis.)

Large Dendrocolaptidæ (length about 250–275 mm.) with roundish, nonoperculate nostril, and nearly straight, depressed bill with distance from nostril to tip of maxilla greater than length of tarsus, and more than three times its depth at nostril.

Bill about as long as or slightly longer than head, nearly straight, broad and depressed basally, its width at frontal antiæ very slightly to much greater than its depth at same point and equal to less than one-third the distance from nostril to tip of maxilla; culmen very much longer than tarsus, distinctly (sometimes sharply) ridged, gradually (usually very slightly) curved to near tip, where abruptly decurved, the tip of maxilla distinctly uncinatè; maxillary tomium nearly straight to slightly but distinctly concave, distinctly notched subterminally; mandibular tomium very faintly to rather distinctly convex, with faint trace of subterminal notch; gonys practically straight for most of its length but convex and slightly prominent basally, sometimes slightly decurved terminally. Nostril exposed, posteriorly in contact with latero-frontal feathering, roundish or broadly oval, nonoperculate. Rictal bristles absent, but feathers of chin and lores with loose, semidecomposed, setaceous webs. Wing large, pointed, the longest primaries exceeding secondaries by nearly to quite the distance from nostril to tip of maxilla; seventh, seventh and eighth, or sixth, seventh, and eighth primaries longest, the tenth (outermost) two-thirds or more as long as the longest, the ninth longer than fourth, sometimes longer than fifth. Tail nearly as long as wing, graduated for about the length of culmen, the rectrices (12) conspicuously acuminate, with very strong and extremely rigid shafts, which are more or less strongly decurved terminally. Tarsus shorter than exposed culmen, a little more than one-fifth as long as wing, rather slender, distinctly scutellate (endaspidean); middle toe, with claw, slightly shorter than tarsus; outer toe (with or without claw) as long as middle toe or very slightly longer; inner toe (without claw) reaching to a little beyond subterminal articulation of middle toe, its claw reaching to base of middle claw (*D. certhia*) or falling far short (*D. validus*); hallux decidedly shorter than inner toe, little if any stouter; middle toe united to outer toe by whole of basal and part of second phalanx, to inner toe by at least half the basal phalanx; claws large, very strongly curved, very acute, that of the hallux less strongly curved, longer than the digit.

*Coloration*.—Brown or olive, the tail, upper tail-coverts and remiges deep cinnamon-rufous or chestnut; pileum streaked, or spotted with paler brown or buffy or barred with black; under parts paler brown, olive, or brownish buffy more or less distinctly barred with darker or blackish, the chest sometimes streaked, the throat usually mostly dull whitish or pale brownish buffy. Sexes alike.

*Nidification*.—Nesting in holes of trees; eggs white.



*Range*.—Southern Mexico to Cayenne, southeastern Brazil, Bolivia, and Ecuador. (About twelve species.<sup>a</sup>)

KEY TO THE SPECIES AND SUBSPECIES OF DENDROCOLAPTES.

- a. Pileum barred or transversely lunulated with black. (*Dendrocolaptes sancti-thomæ*.)
  - b. Pileum distinctly more rufescent or tawny than color of back; back more broadly or more distinctly barred; bars on under parts broader. (Southeastern Mexico to western Panamá.)....*Dendrocolaptes sancti-thomæ sancti-thomæ* (p. 229).
  - bb. Pileum nearly (sometimes quite) concolor with back; back more narrowly or less distinctly barred; bars on under parts narrower. (Southwestern Costa Rica and adjacent part of western Panamá.)
    - Dendrocolaptes sancti-thomæ hesperius* (p. 232).
- aa. Pileum streaked with buffy or whitish.
  - b. Pileum blackish, with narrow (and indistinct?) buffy streaks; chest with pale buffy or whitish predominating (the mesial streaks broader). (Guatemala.)
    - Dendrocolaptes puncticollis* (p. 232<sup>b</sup>).
  - bb. Pileum grayish brown, with broader and more distinct streaks; chest with brown predominating, the buffy mesial streaks narrower. (*Dendrocolaptes validus*.)
    - c. Chest more distinctly and regularly streaked; under parts less extensively barred. (Colombia, etc.)...*Dendrocolaptes validus validus?* (extralimital).<sup>c</sup>
    - cc. Chest less distinctly or more irregularly streaked (the streaks broken along edges by black dots or bars) and under parts more extensively streaked. (Costa Rica and Panamá; Nicaragua?; northwestern Colombia?).
      - Dendrocolaptes validus costaricensis* (p. 233).

DENDROCOLAPTES SANCTI-THOMÆ SANCTI-THOMÆ (Lafresnaye).

BARRED WOODHEWER.

*Adults (sexes alike)*.—Pileum and hindneck dull cinnamon-rufous or russet marked with crescentic bars or lunules of black; back, scapulars, and smaller (lesser and middle) wing-coverts olive-brown (nearly raw-umber to mars brown), barred, more or less distinctly, with black; rump, upper tail-coverts, tail, and proximal secondaries deep cinnamon-rufous or chestnut (the tail usually darker, more chestnut, than other parts), the shafts of rectrices darker; primaries and distal secondaries deep cinnamon-rufous edged, more or less broadly, with grayish brown or olive, the inner webs of longer prima-

<sup>a</sup> Of these the following have been examined in this connection: *D. picumnus* Lichtenstein, *D. validus* Tschudi, *D. certhia* (Boddaert), *D. obsoletus* Ridgway, *D. radiolatus* Selater and Salvin, and *D. sancti-thomæ* (Lafresnaye).

<sup>b</sup> I have not seen a specimen of this form, and, as stated on p. 233, the published descriptions do not clearly indicate the differences from *D. validus*.

<sup>c</sup> *Dendrocolaptes validus* Tschudi, Fauna Peruana, Aves, 1845, 242, pl. 21, fig. 2 (Peru); Selater, Cat. Birds Brit. Mus., xv, 1890, 172, part.—*Dendrocolaptes multistriatus* Eyton, Jardine's Contr. Orn., 1851, 75 (locality not indicated; coll. Derby Mus.).

I have not seen a Peruvian specimen of this species, and am therefore not at all sure that the Colombian specimens (chiefly from the Santa Marta district), with which I have compared Costa Rican examples, are subspecifically the same.

ries grayish brown or dusky terminally; lores plain gray or dusky; suborbital, auricular, and malar regions brownish buff or clay color narrowly barred with blackish; chin and upper throat dull grayish, the latter indistinctly barred with darker; rest of under parts brownish buff or light buffy cinnamon, everywhere barred with black or dusky, the bars more lunulate or crescentic on foreneck and chest, narrower and less blackish on posterior parts; under wing-coverts light ochraceous or ochraceous-buff, narrowly and irregularly barred with black; inner webs of remiges light cinnamon-rufous, the outer primaries passing into grayish brown terminally; bill dusky horn color, sometimes nearly black terminally, paler brown basally, especially on mandible; iris brown; legs and feet horn color or dusky (in dried skins).

*Young*.—Similar to adults, but bars on under parts less sharply defined, especially on posterior portions, the under tail-coverts more rufescent.

*Adult male*.—Length (skins), 248–289 (260); wing, 119–134 (127.2); tail, 105–121.5 (112.9); culmen, 35–44 (37.9); tarsus, 26–30 (27.9); middle toe, 19–23.5 (21.2).<sup>a</sup>

*Adult female*.—Length (skins), 250–276 (261); wing, 120.5–136 (127); tail, 105–122.5 (115.3); culmen, 35–38 (37); tarsus, 27–29.5 (28); middle toe, 20–23.5 (21.3).<sup>b</sup>

Southeastern Mexico, in States of Vera Cruz (Pasa Nueva) and Campeche (Apazote), and southward through Guatemala (Vera Paz), British Honduras (Belize; Orange Walk; Toledo District; near Mana-

<sup>a</sup> Twenty-one specimens.

<sup>b</sup> Twenty specimens.

| Locality.                                      | Wing. | Tail. | Culmen. | Tarsus. | Middle toe. |
|------------------------------------------------|-------|-------|---------|---------|-------------|
| MALES.                                         |       |       |         |         |             |
| Two adult males from eastern Panamá.....       | 127   | 105.7 | 41.7    | 28.7    | 22.7        |
| Two adult males from western Panamá.....       | 132   | 117.2 | 39.2    | 28.5    | 21.2        |
| Ten adult males from eastern Costa Rica.....   | 128.3 | 113.6 | 37.5    | 28.4    | 21.6        |
| One adult male from eastern Nicaragua.....     | 129   | 114.5 | 38      | 26.5    | 20.5        |
| Two adult males from Honduras.....             | 119.2 | 113.2 | 37.7    | 27.2    | 21          |
| Two adult males from British Honduras.....     | 122.2 | 113.7 | 37      | 27.2    | 20.7        |
| Two adult males from Campeche.....             | 123.7 | 110   | 35      | 26      | 19          |
| FEMALES.                                       |       |       |         |         |             |
| One adult female from eastern Panamá.....      | 132.5 | 105.5 | 37.5    | 28      | 22          |
| One adult female from western Panamá.....      | 128   | 121   | 36.5    | 28      | 21.5        |
| Ten adult females from eastern Costa Rica..... | 127.6 | 116.2 | 37.1    | 28.8    | 21.4        |
| One adult female from western Nicaragua.....   | 136   | 120   | 37.5    | 29.5    | 21          |
| One adult female from southern Honduras.....   | 126   | ..... | 37      | 29.5    | 22.5        |
| Three adult females from British Honduras..... | 126.2 | 117.8 | 37.3    | 27.5    | 20.8        |
| One adult female from Campeche.....            | 123   | 109   | 37      | 27      | 20          |
| Two adult females from Vera Cruz.....          | 122.7 | 115.2 | 37.5    | 28.5    | 21          |

tee Lagoon; Quamin Creek), Honduras (Omoa; Santo Tomas; Santa Ana; Yaruca; Rio Segóvia), Nicaragua (Mosquito coast; Greytown; Rio Escondido; Sucuyá; Momotombo; San Gerónimo, Chinandega), northern and eastern Costa Rica (Navarro; Cuábres; Limón; Talamanca; Rio Matina; Pacuare; Tucurríqui; Bonilla; Naranjo de Cartago; Rio Súcio; Guácimo; Guápiles; Juan Viñas; La Cristina; El Hogár; Cariblanco de Sarapiquí; Bebedero; Bolsón; Boruca; La Vijagua; Coralillo; Tenório; Cerro Santa Maria; Santa Maria; Miravalles;<sup>a</sup> Aguacate Mountains?)<sup>b</sup> and Panamá (Lion Hill; Panamá; Punta de Sabana; Divala).

*Dendrocops sancti-thomæ* LAFRESNAYE, Rev. et Mag. Zool., Oct., 1852, 466 (Santo Tomas, Honduras).<sup>c</sup>

*Dendrocolaptes sancti-thomæ* SCLATER, Proc. Zool. Soc. Lond., 1858, 96 (s. Mexico; Honduras; Mosquito coast, Nicaragua); Cat. Am. Birds, 1862, 163 (Honduras); Cat. Birds Brit. Mus., xv, 1890, 174, part (near Belize, Brit. Honduras; Vera Paz, Guatemala; Honduras; Tucurríqui, Costa Rica; Panama).—MOORE, Proc. Zool. Soc. Lond., 1859, 54 (Omoa, Honduras; Belize, Brit. Honduras).—SCLATER and SALVIN, Ibis, 1859, 118 (Santo Tomas, Honduras); Proc. Zool. Soc. Lond., 1864, 355 (Lion Hill, Panamá; crit.).—LAWRENCE, Ann. Lyc. N. Y., vii, 1862, 320 (Lion Hill); viii, 1867, 181 (Greytown, Nicaragua); ix, 1868, 106 (San José, Costa Rica).—FRANTZIUS, Journ. für Orn., 1869, 305 (Aguacate Mts., Costa Rica).—WYATT, Ibis, 1871, 331 (Colombia).—BOUCARD, Proc. Zool. Soc. Lond., 1878, 60 (Navarro, Costa Rica); Ann. Soc. Linn. Lyon, 1878, 38 (Guatemala).—NUTTING, Proc. U. S. Nat. Mus., vi, 1883, 385 (Sucuyá, Nicaragua).—ZELEDÓN, Anal. Mus. Nac. Costa Rica, i, 1887, 113 (Pacuare, Costa Rica).—RIDGWAY, Proc. U. S. Nat. Mus., x, 1887, 589 (Segóvia R., Honduras).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1891, 192, part (Orange Walk and Belize, Brit. Honduras; Vera Paz, Guatemala; Omoa and Segóvia R., Honduras; Greytown, Sucuyá, and Momotombo, Nicaragua; Navarro and Tucurríqui, Costa Rica; Lion Hill, Panamá).—RICHMOND, Proc. U. S. Nat. Mus., xvi, 1893, 498 (Rio Escondido, Nicaragua).—UNDERWOOD, Ibis, 1896, 440 (Volcan Miravalles, Costa Rica).—SALVADORI and FESTA, Boll. Mus. Zool., etc., Torino, xiv, 1899, no. 339, 7 (Punta de Sabana, Panamá).

*Dendrocolaptes sanctithomæ* BANGS, Bull. Mus. Comp. Zool., xxxix, 1903, 151 (Yaruca, Honduras).

[*Dendrocolaptes*] *sancti-thomæ* GRAY, Hand-list, i, 1869, 175, no. 2374.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 67.—SHARPE, Hand-list, iii, 1901, 87, part (Mexico to Panamá).

*D*[*endrocolaptes*] *sancti-thomæ* SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1868, 56.

*D*[*endrocolaptes*] *c[erthia] sancti-thomæ* MENEGAUX and HELLMAYR, Mém. Soc. N. H. d'Autun, xix, 1906, 125, in text.

*Dendrocolaptes sancti-thomæ sancti-thomæ* CARRIKER, Ann. Carnegie Mus., vi, 1910, 659 (Costa Rica, up to 2,000 ft.).

<sup>a</sup> Some specimens from Miravalles are intermediate between the typical form and *D. s. hesperius*.

<sup>b</sup> Specimens from Aguacate Mts. not seen by me. Possibly they are referable to *D. s. hesperius*.

<sup>c</sup> In original, island of St. Thomas; but this obviously an error; see Salvin and Godman, Biol. Centr.-Am., Aves, ii, p. 192.



**DENDROCOLAPTES SANCTI-THOMÆ HESPERIUS** Bangs.**BORUCA WOODHEWER.**

Similar to *D. s. sancti-thomæ* but pileum duller, much less rufescent (nearly concolor with back), back less distinctly barred (bars often obsolete), and bars on under parts much narrower.

*Adult male*.—Length (skins), 241–272 (253); wing, 119.5–130.5 (127); tail, 103–120.5 (112); culmen, 37.5–41.5 (39.5); tarsus, 27–30 (28.5); middle toe, 21–22 (21.5).<sup>a</sup>

*Adult female*.—Length (skins), 243–275 (260); wing, 117.5–135 (126.9); tail, 104–117.5 (112.4); culmen, 36–39 (37.7); tarsus, 27.5–29 (28.4); middle toe, 21–22.5 (21.6).<sup>b</sup>

Southwestern Costa Rica (Boruca,<sup>c</sup> Pozo del Rio Grande, Lagarto, and Paso Real, Boruca; El Pozo de Térraba; Buenos Aires; Pigres; Aguacate Mountains?) and adjacent portion of western Panamá (Chiriquí; Santiago de Verágua; Bugaba); western Nicaragua (San Gerónimo, Chinandega)?

*Dendrocolaptes sancti-thomæ* (not of Sclater, 1858) SALVIN, Proc. Zool. Soc. Lond., 1867, 144 (Santiago de Verágua, Panamá); 1870, 193 (Bugaba, Panamá).—SCLATER, Cat. Birds Brit. Mus., xv, 1890, 174, part (Santiago and Bugaba, Panamá).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1891, 192, part (Aguacate Mts., Costa Rica?; Bugaba and Santiago de Verágua, Panamá).—CHERRIE, Expl. Zool. Merid. Costa Rica, 1893, 41 (Boruca, Costa Rica).

*Dendrocolaptes sancti-thomæ hesperius* BANGS, Auk, xxiv, July, 1907, 299 (Lagarto, s. w. Costa Rica; coll. E. A. and O. Bangs).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 660 (Térraba Valley, s. w. Costa Rica; crit.).

**DENDROCOLAPTES PUNCTICOLLIS** Sclater and Salvin.**SPOTTED-NECKED WOODHEWER.**

“Above fulvous-brown; head rather darker, with pale fulvous linear shaft-stripes, which are sparingly continued over the upper back; outer secondaries and tail ferruginous; beneath paler; throat pale fulvous, with slight blackish variegations; breast with broad shaft-spots of pale fulvous laterally edged with black; belly marked with numerous fine black cross-bands; under wing-coverts ochraceous slightly flecked with black; bill pale horn-colour: whole length 10.5 inches [266.5 mm.], wing 5.1 [129.5 mm.], tail 4.5 [114.5 mm.].”<sup>d</sup>

Above olive-brown, upper tail coverts, outer surface of wings, and tail rufescent [“rubiginosis”], wing-coverts concolor with back, head

<sup>a</sup> Ten specimens from southwestern Costa Rica.

<sup>b</sup> Seven specimens.

<sup>c</sup> Among specimens from Boruca are some that I can not distinguish from typical *D. sancti-thomæ*; in fact, while the difference of coloration in the two forms is quite obvious when extreme examples are compared, the absence of strict correlation between the color-differences and geographic distribution is difficult to understand.

<sup>d</sup> Sclater's description in Cat. Birds Brit. Mus., xv, 1890, 171.

black and, together with hindneck and upper back, marked with obsolete shaft-stripes of fawn color [“cervinis”]; beneath paler, all the feathers of throat to middle of breast whitish margined with fuscous, streaks on breast narrower, abdomen and crissum transversely barred with brownish black, under wing-coverts and inner webs of remiges cinnamon, the former variegated with fuscous, the latter with terminal portion fuscous; bill horn color, mandible paler, feet plumbeous. Total length 10.5 [inches=266.5 mm.], wing 5.2 [132 mm.], tail 4.5 [114.5 mm.], bill to rictus 1.65 [42 mm.], tarsus 1.05 [26.5 mm.].<sup>a</sup>

Both Sclater and Salvin and Godman compare this form with the South American *D. picumnus*, but the characters wherein it differs from the Costa Rican form of *D. validus* are not clear from either of the descriptions quoted or the context thereof. The form is probably a subspecies of *D. validus*.

Highlands of Guatemala (Tactic; San Gerónimo).

*Dendrocolaptes multistrigatus* (not *Dendrocolaptes multistrigatus* Eyton) SALVIN and SCLATER, Ibis, 1860, 275 (Tactic and San Gerónimo, Guatemala; crit.).

*Dendrocolaptes multistrigatus* (not of Eyton) SCLATER, Cat. Am. Birds, 1862, p. 162, no. 995 (San Gerónimo).

*Dendrocolaptes puncticollis* SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1868, 54, pl. 5 (Tactic and San Gerónimo, Vera Paz, Guatemala; coll. Salvin and Godman and coll. P. L. Sclater).—SCLATER, Cat. Birds Brit. Mus., xv, 1890, 171, excl. syn. part (Tactic and San Gerónimo).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1891, 190.

[*Dendrocolaptes*] *puncticollis* GRAY, Hand-list, i, 1869, 176, no. 2378.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 67.—SHARPE, Hand-list, iii, 1901, 87.

### DENDROCOLAPTES VALIDUS COSTARICENSIS Ridgway.

#### COSTA RICAN WOODHEWER.

Similar to *D. v. validus*,<sup>b</sup> but chest less distinctly streaked or with streaks less regular (broken along edges by black dots or bars), and under parts much more extensively barred.

*Adults (sexes alike).*—Pileum and hindneck dull grayish brown or sepia, with narrow mesial streaks of very pale brownish buffy or dull buffy whitish, the supra-auricular region, lower portion of auricular region, and sides of neck similar but with the streaks much broader, the upper portion of auricular region dark sooty brown or blackish with very narrow shaft-streaks of pale buffy or dull whitish; malar region with feathers dark sooty brown on margin, with a central ovate spot of pale brownish buffy; back, scapulars, and wing-coverts plain olive-brown (between bister and raw-umber), the back usually

<sup>a</sup> Biol. Centr.-Am., Aves, ii, 1891, 190; free translation.

<sup>b</sup> See p. 229. (Comparison is made with specimens from State of Santa Marta, Colombia, which, however, probably do not represent true *D. validus*.)

with very indistinct narrow shaft-streaks of paler; rump, upper tail-coverts, and proximal secondaries deep cinnamon-rufous, the first intermixed, more or less, with olive-brown; tail chestnut, with shafts of rectrices more or less darker; primaries and distal secondaries deep cinnamon-rufous, edged, more or less broadly, with olive-brownish, the terminal portion of inner webs of longer primaries grayish brown or dusky; chin and throat light brownish buffy or pale clay color, the feathers edged with brown, producing a rather confused streaked appearance, those of the lower throat with broader brownish edgings and sometimes narrowly margined terminally with dusky; feathers of foreneck similarly marked but with small transverse spots in the brown edgings; chest light olive-brown or buffy grayish brown (varying from nearly broccoli brown to nearly raw-umber), with broad mesial streaks of pale buffy, these margined with a narrow line of blackish, these lines sometimes partially broken into small spots; rest of under parts light buffy brown, everywhere marked with narrow crescentic bars of black, these bars less distinct on flanks, thighs, and anal region; under wing-coverts ochraceous-buff or light ochraceous, with narrow, more or less crescentic, bars of blackish; inner webs of remiges light cinnamon-rufous, the outer primaries with terminal portion dusky; bill brown or horn color (more or less deep), paler (sometimes whitish) terminally and along tomia; iris brown; legs and feet dark horn color or dusky (in dried skins).

*Young*.—Similar to adults but general coloration darker and more rufescent, the pileum sooty blackish, with streaks broader and more tawny, the black bars on under parts indistinct or obsolete.

*Adult male*.—Length (skins), 238–280 (251); wing, 126–130 (127.6); tail, 115.5–119.5 (116.7); culmen, 33–35 (34.1); tarsus, 26–28.5 (27); middle toe, 20–22 (21.1).<sup>a</sup>

*Adult female*.—Length (skins), 250–273 (261); wing, 120–126 (123); tail, 112–121 (116); culmen, 33.5–34 (33.7); tarsus, 27; middle toe, 20–21 (20.5).<sup>b</sup>

Costa Rica (Cartago, Naranjo, and Navarro, Cartago; Volcán de Irazú; Rio Súcio; Laguária, Los Reyes, Santa Maria, Dota) and

<sup>a</sup> Six specimens.

<sup>b</sup> Two specimens.

| Locality.                                            | Wing. | Tail. | Culmen. | Tarsus. | Middle toe. |
|------------------------------------------------------|-------|-------|---------|---------|-------------|
| <b>MALES.</b>                                        |       |       |         |         |             |
| Five adult males from Costa Rica.....                | 127.6 | 116.7 | 34.1    | 27      | 21.1        |
| One adult male from Panamá (Capira).....             | 126.5 | 119.5 | 35      | 27.5    | 21          |
| <b>FEMALES.</b>                                      |       |       |         |         |             |
| One adult female from southwestern Costa Rica.....   | 126   | 112   | 34      | 27      | 20          |
| One adult female from western Panamá (Chiriquí)..... | 120   | 121   | 33.5    | 27      | 21          |



Panamá (Boquete, Chiriquí; Capira); Nicaragua?; State of Antioquia, Colombia (Medellín; Frontino)?

(?) *Dendrocops multistrigatus* (not *Dendrocolaptes multistrigatus* Eyton) BONAPARTE, Notes Orn. Coll. Delattre, 1854, 87 (Nicaragua).

*Dendrocolaptes multistrigatus* (not of Eyton) LAWRENCE, Ann. Lyc. N. Y., ix, 1868, 106, 146 (Navarro, Costa Rica; crit.).—FRANTZIUS, Journ. für Orn., 1869, 305 (Navarro).

*Dendrocolaptes puncticollis* (not of Sclater and Salvin) LAWRENCE, Ann. Lyc. N. Y., ix, 1868, 146 (Navarro).—BOUCARD, Proc. Zool. Soc. Lond., 1878, 60 (Naranjo de Cartago, Costa Rica; habits).—ZELEDÓN, Anal. Mus. Nac. Costa Rica, i, 1887, 113 (Cartago, Costa Rica).—RIDGWAY, Proc. U. S. Nat. Mus., xi, 1889, 545 (Navarro; crit.).—BANGS, Proc. New Engl. Zool. Club, iii, 1902, 48 (Boquete, 7,000 ft., Panamá).

*Dendrocolaptes validus* (not of Tschudi) SCLATER, Cat. Birds Brit. Mus., xv, 1890, 172, part (Panamá; Medellín and Frontino, prov. Antioquia, Colombia?).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1891, 191, part (Navarro and Naranjo, Costa Rica; Panamá; Colombia?).

[*Dendrocolaptes*] *validus* SHARPE, Hand-list, iii, 1901, 87, part (Costa Rica; Panamá).

*Dendrocolaptes validus costaricensis* RIDGWAY, Proc. Biol. Soc. Wash., xxii, April 17, 1909, 73 (Laguaria, Santa Maria de Dota, s. w. Costa Rica; coll. U. S. Nat. Mus.).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 658 (Costa Rica; crit.).

#### Genus XIPHOCOLAPTES Lesson.

*Xiphocolaptes* LESSON, Rev. Zool., 1840, 269. (Type, *Dendrocopus albicollis* Vieillot.)

Very large Dendrocolaptidæ (length about 280–320 mm.) with bill longer than head, stout, more or less (but never strongly) decurved, and compressed (much deeper than broad at nostrils).

Bill longer than head (commisure nearly twice as long as tarsus), slightly decurved, much compressed, its depth at nostril much greater than its width at same point; culmen scarcely ridged, gradually decurved from base, the tip of maxilla not uncinat; tomia gradually decurved, without trace of subterminal notch; gonys straight or (sometimes) slightly decurved terminally, slightly prominent and convex basally, where there is a more or less distinct narrow median ridge on under side. Nostril exposed, posteriorly in contact with latero-frontal feathers or nearly so, obliquely oval, non-operculate. Rictal bristles absent; feathers of chin and loreal region with open or semi-decomposed webs. Wing rather large and pointed, with longest primaries exceeding secondaries by less than length of bill from nostril; sixth, seventh, and eighth, fifth, sixth, and seventh, or sixth and seventh, primaries longest, the tenth (outermost) a little more than two-thirds as long as the longest, the ninth longer than fourth. Tail about six-sevenths as long as wing, graduated for more than one-third its length, the rectrices (12) acuminate, with the excessively strong and rigid shafts decurved and twisted terminally. Tarsus about as long as bill from nostril,

about one-fourth as long as wing, stout, very distinctly scutellate (endaspidean); middle toe, with claw, about as long as tarsus or slightly longer; outer toe (with or without claw) as long as middle toe or barely shorter; inner toe (without claw) reaching to subterminal articulation of middle toe, its claw falling considerably short of terminal articulation of middle toe; hallux much shorter than inner toe and slightly thicker; middle toe united for whole of its first and part of its second phalanx to outer toe, for about half its first phalanx to inner toe; claws large, very strongly curved, very acute, that of the hallux less strongly curved, equal to or slightly longer than the digit.

*Coloration*.—Tail and remiges cinnamon-rufous or chestnut, the inner webs of longer primaries tipped with dusky; rest of plumage brownish (sometimes cinnamon-rufous), the chest, pileum, and hindneck (sometimes back also) streaked with paler, the throat at least partly dull whitish. Sexes alike.

*Nidification*.—Nests in holes; eggs white.

*Range*.—Southern Mexico to southeastern Brazil, Paraguay, Argentina, Bolivia, and Peru. (About eighteen species, including subspecies.<sup>a</sup>)

KEY TO THE SUBSPECIES OF *XIPHOCOLAPTES EMIGRANS*.<sup>b</sup>

- a. Smaller (wing averaging 137.5 in male, 134.7 in female; culmen averaging 46.9 in male, 48.7 in female). (Highlands of Guatemala.)

*Xiphocolaptes emigrans emigrans* (p. 237).

- bb. Larger (wing averaging 140 or more in males, 136 or more in females; culmen averaging 52 or more in males, usually more than 55 in females).

- c. Coloration darker and brighter (much as in *X. e. emigrans*).

- d. Wing averaging shorter (140 in male, 138 in female) but bill larger (culmen averaging 53 in male, 55 in female); pileum darker, with streaks paler. (Highlands of southeastern Mexico.)

*Xiphocolaptes emigrans sclateri* (p. 238).

- dd. Wing averaging longer (145.5 in male, 136 in female) but bill smaller (culmen averaging 52 in male, 47.7 in female); pileum lighter or browner, with streaks more buffy. (Highlands of Costa Rica.)

*Xiphocolaptes emigrans costaricensis* (p. 239).

- cc. Coloration paler and duller. (Wing averaging 143.3 in male, 140.5 in female; culmen averaging 54.2 in male, 56.5 in female.) (Highlands of southwestern Mexico) ..... *Xiphocolaptes emigrans omiltemensis* (p. 239).

<sup>a</sup> The following have been examined in the preparation of this work: *X. albicollis* (Vieillot), *X. argentinus* Ridgway, *X. emigrans* Sclater (and its several subspecies), *X. promeropirhynchus* (Lesson), *X. crassirostris* Taczanowski and Berlepsch, *X. fortis* Heine, *X. virgatus* Ridgway, *X. ignotus* Ridgway, *X. compressirostris* Taczanowski, *X. saturatus* Ridgway, *X. major* Vieillot, *X. castaneus* Ridgway, and *X. cinnamomeus* Ridgway.

<sup>b</sup> All the Mexican and Central American forms of this genus are evidently very closely related to *X. promeropirhynchus* (Lesson) and other forms of northern South America; but material available for study is so scant that their exact status can not be worked out at the present time.

## XIPHOCOLAPTES EMIGRANS EMIGRANS Sclater and Salvin.

## GUATEMALA WOODHEWER.

*Adults (sexes alike).*—Pileum and hindneck sepia brown to nearly clove brown narrowly streaked with pale buff; back, scapulars, and wing-coverts plain brown (nearly raw-umber or between raw-umber and light olive), the upper back sometimes with narrow shaft-streaks of buffy; rump and upper tail-coverts plain cinnamon-rufous; tail chestnut, the shafts of middle rectrices darker; remiges lighter chestnut, or rufous-chestnut, the primaries and distal secondaries edged (more or less broadly) with brown, the inner webs of longer and outer primaries grayish brown terminally; superciliary region dark brown, rather broadly streaked with pale dull buff or buffy whitish; lores pale grayish buffy or dull brownish whitish; suborbital region dull buffy whitish, the feathers narrowly edged with dark brown; upper portion of auricular region narrowly streaked with dull whitish or pale dull buffy on a dark brown or sepia ground, the lower portion dull whitish or pale dull buffy narrowly streaked with dark brown; malar region dark brown streaked (more or less narrowly) with dull whitish or pale dull buffy; chin and upper throat dull brownish white or pale brownish buffy, the latter faintly streaked (broadly) with pale brownish; rest of under parts raw-umber brown (paler and more fulvescent than back, etc.), more or less tinged with tawny posteriorly (especially on flanks and under tail-coverts), the lower throat, chest, and breast (sometimes abdomen and sides also), with narrow shaft-streaks of pale brownish buffy or dull buffy whitish, the abdomen (more or less distinctly and extensively) usually barred with dusky and buffy whitish or dull pale buffy; under wing-coverts ochraceous or ochraceous-buff, barred with black or dusky; inner webs of remiges cinnamon-rufous, the terminal portion of outer primaries (extensively) grayish brown; bill light horn color, more dusky basally; feet dusky or horn color (in dried skins).

*Adult male.*—Length (skins), 310–340 (318); wing, 135–140 (137.5); tail, 118–123 (120.7); culmen, 44–50 (46.9); tarsus, 31–31.5 (31.4); middle toe, 25–27 (25.7).<sup>a</sup>

*Adult female.*—Length (skins), 290–324 (313); wing, 131–142 (134.7); tail, 112–131.5 (120.1); culmen, 45–51 (48.7); tarsus, 31–32 (31.5); middle toe, 25–28 (26.3).<sup>b</sup>

<sup>a</sup> Four specimens, from Chiapas.

<sup>b</sup> Six specimens.

| Locality.                                                   | Wing. | Tail. | Culmen. | Tarsus. | Middle toe. |
|-------------------------------------------------------------|-------|-------|---------|---------|-------------|
| FEMALES.                                                    |       |       |         |         |             |
| Four adult females from Chiapas (San Cristóbal).....        | 135.2 | 123   | 47.9    | 31.2    | 26          |
| One adult female from Guatemala (Gualán).....               | 131.5 | 112   | 49.5    | 32      | 28          |
| One adult female from Nicaragua (San Rafael del Norte)..... | 136   | 116.5 | 51      | 32      | 26          |



Southern Mexico, in State of Chiapas (San Cristóbal); highlands of Guatemala (San Gerónimo; Cajabón; pine ridge of Poctúm; Gualán); British Honduras; northern Nicaragua (Matagalpa; San Rafael del Norte).

*Xiphocolaptes emigrans* SCLATER and SALVIN, Ibis, April, 1859, 118, 127 (San Gerónimo, Vera Paz, Guatemala; coll. Salvin and Godman); Exotic Orn., pt. v, 1867, 69, pl. 35.—SCLATER, Cat. Am. Birds, 1862, 163 (Guatemala); Cat. Birds Brit. Mus., xv, 1890, 145 (Brit. Honduras; Cajabón, San Gerónimo, and pine ridge of Poctúm, Guatemala).—RIDGWAY, Proc. U. S. Nat. Mus., xii, 1890, 7 (monogr.).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1891, 183, part (Guatemalan localities; Brit. Honduras).

*X[iphocolaptes] emigrans* CABANIS and HEINE, Mus. Hein., ii, 1859, 36 (Guatemala).—(?) SALVIN and GODMAN, Ibis, 1892, 327 (Matagalpa, Nicaragua).

[*Xiphocolaptes*] *emigrans* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 68, part (Guatemala).—SHARPE, Hand-list, iii, 1901, 81.

[*Dendrocolaptes*] *emigrans* GRAY, Hand-list, i, 1869, 176, no. 2389.

### XIPHOCOLAPTES EMIGRANS SCLATERI (Ridgway).

#### SCLATER'S WOODHEWER.

Similar to *X. e. emigrans* but slightly larger; color of pileum darker (more blackish) with streaks slightly less buffy (more whitish); throat more extensively whitish; chest, etc., rather more distinctly streaked.

*Adult male?*—Length (skin), 325; wing, 140; tail, 123; culmen, 53; tarsus, 33; middle toe, 28.5.<sup>a</sup>

*Adult female.*—Length (skin), 326; wing, 138; tail, 123; culmen, 55; tarsus, 33.5; middle toe, 28.<sup>b</sup>

Southeastern Mexico, in States of Vera Cruz (Orizaba; Jalapa) and Oaxaca (Tonagua; La Parada; Reyes).

*Xiphocolaptes albicollis?* (not *Dendrocopus albicollis* Vieillot) SCLATER, Proc. Zool. Soc. Lond., 1857, 202 (Jalapa, Vera Cruz).

*Xiphocolaptes emigrans* SCLATER and SALVIN, Ibis, 1859, 118, part (Jalapa).—SCLATER and SALVIN, Exotic Orn., pt. v, 1867, 69, part (Jalapa).—SUMICHRIST, Mem. Bost. Soc. N. H., i, 1869, 554 (Orizaba, Vera Cruz; habits; food); La Naturaleza, v, 248 (1881).—SANCHEZ, Anal. Mus. Nac. Mexico, i, 1877, 97 (Vera Cruz).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1891, 183, part (Orizaba, Vera Cruz; La Parada and Tonagua, Oaxaca).

*Xiphocolaptes sclateri* RIDGWAY, Proc. U. S. Nat. Mus., xii, no. 761, Feb. 5, 1890, 6 (Orizaba, Vera Cruz; coll. U. S. Nat. Mus.).—SCLATER, Cat. Birds Brit. Mus., xv, 1890, 143 (La Parada, Oaxaca).

[*Xiphocolaptes*] *sclateri* SHARPE, Hand-list, iii, 1901, 81.

<sup>a</sup> One specimen, from Orizaba, Vera Cruz.

<sup>b</sup> One specimen, from Reyes, Oaxaca.

**XIPHOCOLAPTES EMIGRANS OMILTEMENSIS** Nelson.

GUERRERO WOODHEWER.

Similar to *X. e. sclateri* but still larger; general coloration duller and slightly paler, the under parts less rufescent, and lower throat more streaked (as in *X. e. emigrans*).

*Adult male*.—Length (skins), 311–327 (319); wing, 138–148.5 (143.2); tail, 126; culmen, 53–55.5 (54.2); tarsus, 31.5–33 (32.2); middle toe, 27.5–29 (28.2).<sup>a</sup>

*Adult female*.—Length (skins), 307–316 (311); wing, 137–144 (140.5); tail, 110–110.5 (110.2); culmen, 56–57 (56.5); tarsus, 29.5–32.5 (31); middle toe, 26–27.5 (26.7).<sup>a</sup>

Southwestern Mexico, in State of Guerrero (Omiteme).

*Xiphocolaptes emigrans* (not of Sclater and Salvin) SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1891, 183, part (Omiteme, Guerrero).

*Xiphocolaptes emigrans omiltemensis* NELSON, Proc. Biol. Soc. Wash., xvi, Nov. 30, 1903, 153 (Omiteme, Guerrero, s. w. Mexico; coll. U. S. Nat. Mus.).

**XIPHOCOLAPTES EMIGRANS COSTARICENSIS** Ridgway.

CARTAGO WOODHEWER.

Similar to *X. e. emigrans* but slightly larger (except bill) and with under parts more extensively (or more distinctly) streaked.

*Adult male*.—Length (skin), 305; wing, 145.5; tail, 117; culmen, 52; tarsus, 32; middle toe, 27.5.<sup>b</sup>

*Adult female*.—Length (skins), 285–308 (295); wing, 134–140 (136); tail, 102–117 (108); culmen, 44.5–50 (47.7); tarsus, 32; middle toe, 27.5–28.5 (28).<sup>c</sup>

Highlands of Costa Rica (Naranjo and Azahár, Cartago; Juan Viñas; Guayabo).

*Xiphocolaptes emigrans costaricensis* RIDGWAY, Proc. U. S. Nat. Mus., xi, sig. 34, Sept. 20, 1889, 541 (Naranjo de Cartago, Costa Rica; coll. U. S. Nat. Mus.); xii, 1890, 8 (monogr.).—ZELEDÓN, Anal. Mus. Nac. Costa Rica, i, 1887, 114.—CARRIKER, Ann. Carnegie Mus., vi, 1910, 655 (Costa Rica).—FERRY, Pub. 146, Field Mus. N. H., orn. ser., i, no. 6, 1910, 271 (Guayabo, Costa Rica).

[*Xiphocolaptes*] *costaricensis* SHARPE, Hand-list, iii, 1901, 81.

*Xiphocolaptes emigrans* (not of Sclater and Salvin) SCLATER, Cat. Birds Brit. Mus., xv, 1890, 145, part (Costa Rica).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1891, 183, part (Naranjo de Cartago, Costa Rica).

**Genus XIPHORHYNCHUS** Swainson.

*Xiphorhynchus* SWAINSON, Philos. Mag., i, June, 1827, 440. (Type, *X. flavigaster* Swainson; see Oberholser, Smithson. Misc. Coll., xlvi, no. 1579, 1905, 62.)

*Dendroornis* EYTON, Jardine's Contr. Orn., 1852, 23. (Type, *D. susurrans* Jardine.)

Large Dendrocolaptidae (length about 200–260 mm.) with roundish, nonoperculate nostrils, nearly straight bill, and wing less than 120 mm.

<sup>a</sup> Two specimens.<sup>b</sup> One specimen.<sup>c</sup> Three specimens.

Bill about as long as head to decidedly longer, nearly straight, much compressed, its width at latero-frontal antiæ much less than its depth at same point and contained from three and a half to nearly six times in distance from nostril to tip of maxilla; culmen distinctly to obsoletely ridged, straight for basal half (more or less), gently decurved terminally, the tip of maxilla rather strongly decurved but scarcely uncinatè; tomia more or less decurved terminally, without trace of subterminal notch; gonys straight or (sometimes) very faintly concave, slightly prominent basally, sometimes very faintly decurved at tip. Nostril exposed, posteriorly in contact with latero-frontal feathering, roundish or broadly oval, nonoperculate. Rictal bristles absent. Wing moderate, rather pointed, the longest primaries exceeding secondaries by less than to decidedly more than length of tarsus; seventh and eighth, sixth, seventh, and eighth, or sixth and seventh, primaries longest, the tenth (outermost) about three-fourths as long as the longest, the ninth longer than fourth, usually (?) longer than fifth. Tail less than four-fifths to more than six-sevenths as long as wing, graduated for about one-third its length, the rectrices (12) conspicuously acuminate, with the very strong and rigid shafts decurved and somewhat twisted terminally. Tarsus shorter to slightly longer than bill from nostril, less than one-fourth as long as wing, rather slender, distinctly scutellate (endaspidean); middle toe, with claw, slightly longer than tarsus; outer toe (with or without claw) as long as middle toe; inner toe (without claw) reaching to subterminal articulation of middle toe, its claw falling short of base of middle claw; hallux decidedly shorter than inner toe, scarcely stouter; middle toe united for whole of first and part of second phalanx to outer toe, for whole of first phalanx to inner toe; claws large, those of anterior toes very strongly curved and acute, that of hallux less strongly curved, less acute, as long as or longer than the digit.

*Coloration*.—Rump, upper tail-coverts, tail, and remiges (at least partly) plain cinnamon-rufous or chestnut; pileum, hindneck, and back brown, olive, or black, usually streaked or spotted with buff; under parts brown, buffy grayish, or olive, striped or spotted with buffy, sometimes squamated with black on a buffy ground; chin and throat buff, sometimes immaculate, sometimes spotted or barred with olive. Sexes alike.

*Range*.—Southern Mexico to Cayenne, eastern and central Brazil, Bolivia, and Peru. (About thirty species and subspecies.<sup>a</sup>)

KEY TO THE SPECIES AND SUBSPECIES OF XIPHORHYNCHUS.

a. Under parts striped or streaked with buffy.

b. Back black, with broad streaks of buff; under parts striped with black and buff.  
(*Xiphorhynchus lachrymosus*.)

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<sup>a</sup> About half of them have not been examined in this connection.



- c. Posterior under parts obsoletely striped. (Nicaragua to northwestern Colombia.).....**Xiphorhynchus lachrymosus lachrymosus** (p. 242).
- cc. Posterior under parts distinctly striped with black and buff. (Southwestern Costa Rica and western Panamá.)  
**Xiphorhynchus lachrymosus eximius** (p. 243).
- bb. Back brown, with streaks of buff margined with black (or with these streaks obsolete).
- c. Back conspicuously streaked; general color lighter and grayer.
- d. Throat immaculate buff, or with dusky squamations on lower or middle portion. (*Xiphorhynchus flavigaster*.)
- e. Darker and browner, the throat immaculate. (Eastern Mexico, except Yucatan, to Nicaragua.)**Xiphorhynchus flavigaster flavigaster** (p. 244).
- ee. Paler and grayer, the lower throat usually squamated with grayish brown.
- f. Lower throat squamated with grayish brown.
- g. Smaller; averaging, wing 114.4 in male, 106.1 in female; exposed culmen 40.4 in male, 39.7 in female. (Western Mexico.)  
**Xiphorhynchus flavigaster mentalis** (p. 247).
- gg. Larger; averaging, wing 117.4 in male, 110.5 in female; exposed culmen 43.2 in male, 42.2 in female. (Southwestern Mexico.)  
**Xiphorhynchus flavigaster megarhynchus** (p. 248).
- ff. Throat immaculate. (Yucatan.)  
**Xiphorhynchus flavigaster yucatanensis** (p. 248).
- dd. Throat conspicuously streaked with blackish. (Eastern Mexico.)  
**Xiphorhynchus striatigularis** (p. 249).
- cc. Back obsoletely streaked (the streaks mostly confined to upper back); general color darker and browner. (*Xiphorhynchus nanus*.)
- d. Chin and throat deeper buff.
- e. General coloration slightly lighter. (Eastern Panamá to Colombia.)  
**Xiphorhynchus nanus nanus** (p. 250).
- ee. General coloration slightly darker. (Western Panamá to southern Honduras.).....**Xiphorhynchus nanus costaricensis** (p. 252).
- dd. Chin and throat paler buff or buffy white. (Northern Honduras and eastern Guatemala.).....**Xiphorhynchus nanus confinis** (p. 253).
- aa. Under parts spotted with buffy.
- b. Pileum and back distinctly streaked (but streaks small).
- c. Back rufescent brown; under parts browner. (Southeastern Mexico to Honduras).....**Xiphorhynchus erythropygius** (p. 254).
- cc. Back and under parts olive. (Colombia and Venezuela.)  
**Xiphorhynchus triangularis** (extralimital).<sup>a</sup>

<sup>a</sup> *Dendrocolaptes triangularis* Lafresnaye, Rev. Zool., v, May, 1842, 134 ("Bolivia"; coll. Lafresnaye); Mag. de Zool., 1843, Ois., pl. 32.—*Nasica triangularis* Lafresnaye, Rev. Zool., 1850, 418.—*Dendroornis triangularis* Sclater, Proc. Zool. Soc. Lond., 1855, 142 (Bogotá, Colombia); Cat. Birds Brit. Mus., xv, 1890, 132.—*Picolaptes triangularis* Eyton, Contr. Orn., 1852, 22.—*Xiphorhynchus triangularis triangularis* Oberholser, Smithson. Misc. Coll., xlviii, pt. i, no. 1579, May 13, 1905, 63.—*D[endroornis] [riangularis] bogotensis* Berlepsch and Stolzmann, Proc. Zool. Soc. Lond., 1896, 376, in text.—*Xiphorhynchus triangularis bogotensis* Oberholser, Smithson. Misc. Coll., xlviii, pt. i, no. 1579, May 13, 1905, 63.

The above synonymy includes two or more subspecies, but the characters given in the key are taken from Bogotá specimens. Another name possibly pertaining to a form of this species is *Dendroornis erythropygia æquatorialis* Berlepsch and Taczanowski, Proc. Zool. Soc. Lond., 1883, 563 (Chimbo, w. Ecuador); *Dendroornis æquatorialis* Salvadori and Festa, Boll. Mus. Zool., etc., Torino, xv, 1899, no. 362, p. 25 (Foreste del Rio Peripa, w. Ecuador; syn.; crit.); but this may be a form of *X. punctigulus*.

- bb. Pileum and back not streaked (except forehead and extreme upper back, where streaks are mostly concealed). (*Xiphorhynchus punctigulus*.)
- c. Pileum and back olive; general color of under parts olive, the throat with heavier and more numerous triangular spots of the same. (Costa Rica and western Panamá.).....*Xiphorhynchus punctigulus punctigulus* (p. 255).
- cc. Pileum and back sepia brown to burnt umber; general color of under parts brownish olive, the throat with smaller and fewer spots of the same. (Eastern Panamá and adjacent portion of Colombia.)
- Xiphorhynchus punctigulus insolitus* (p. 257).

**XIPHORHYNCHUS LACHRYMOSUS LACHRYMOSUS (Lawrence).**

**BLACK-STRIPED WOODHEWER.**

*Adults (sexes alike).*—Pileum and hindneck brownish black, each feather with a conspicuous mesial broad guttate streak of light buff; back and scapulars similar, but the mesial streaks much larger and deeper buff; rump, upper tail-coverts, remiges, proximal greater wing-coverts and inner-anterior portion of lesser covert area deep cinnamon-rufous, the longer primaries dark grayish brown or dusky terminally; tail, including shafts of rectrices, deep chestnut; middle wing-coverts and outer webs of distal greater coverts black or brownish black, the former with a broad mesial streak of buff or with a U-shaped mark of the same; primary coverts cinnamon-rufous, their outer webs more or less distinctly edged with grayish brown; sides of head light buff, the auricular region broadly streaked with brownish black, the feathers of suborbital and malar regions margined with the same; chin and throat light buff, the feathers of lower throat narrowly margined terminally with brownish black or dusky; chest, breast, and median portion of abdomen buff, the first and second with feathers broadly margined or squamated with brownish black, the last streaked with dusky; sides and flanks pale buffy grayish brown (pale broccoli brown), indistinctly streaked with pale buff and dusky; under tail-coverts similar, but with broad mesial streaks of buffy margined with a line of dusky; under wing-coverts deep ochraceous-buff or tawny-buff, the inner webs of remiges deeper (inclining to cinnamon-rufous), the longer primaries dusky terminally; maxilla horn color (more or less deep), sometimes darker on culmen; mandible pale horn color passing into dull pale yellowish or whitish (broadly) on gonys; legs and feet horn color (in dried skins).

*Adult male.*—Length (skins), 219–248 (233); wing, 111.5–131.5 (125); tail, 88–106 (99.8); culmen, 33–38.5 (34.9); tarsus, 22.5–24.5 (23.4); middle toe, 18–20 (19.2).<sup>a</sup>

*Adult female.*—Length (skins), 218–250 (231); wing, 114–125 (119); tail, 86–103 (92.3); culmen, 35–38 (36); tarsus, 22–24 (23); middle toe, 18.5–20.5 (19.6).<sup>b</sup>

<sup>a</sup> Ten specimens, from Costa Rica.

<sup>b</sup> Five specimens, from Costa Rica.

Nicaragua (Bluefields; Chontales; Rio Escondido), northern, eastern, and central Costa Rica (Puerto Limón; Rio Sicsola; Talamanca; Cuábre; El Hogár; La Vijagua; Rio Reventazón; Bonilla; La Florida; Pacuare; San José; Volcán de Miravalles), and Panamá (Divala; Lion Hill) to extreme northwest portion of Colombia (Rio Truando).

*Dendroornis* sp.? CASSIN, Proc. Acad. Nat. Sci. Phila., 1860, 194 (Rio Truando, n. w. Colombia).—LAWRENCE, Ann. Lyc. N. Y., vii, 1862, 292 (Lion Hill, Panamá).

*Dendroornis lachrymosus* LAWRENCE, Ann. Lyc. Nat. Hist. N. Y., vii, 1862, 467 (Lion Hill station, Panamá Railway; coll. G. N. Lawrence).

*D[endroornis] lachrymosa* SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1870, 839 (Nicaragua; Costa Rica; Panamá).

*Dendroornis lachrymosa* ZELEDÓN, Cat. Aves de Costa Rica, 1882, 11; Anal. Mus. Nac. Costa Rica, i, 1887, 114, part (Pacuare, Costa Rica).

*D[endroornis] lachrymosa lachrymosa* HELLMAYR, Journ. für Orn., Oct., 1903, 537, in text (crit.).

*Dendroornis lacrymosa* SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1864, 355 (Panamá; crit.); 1867, 279 (Bluefields R., Nicaragua); (?) 1879, 523 (Remédios, Antioquia, Colombia).—SALVIN, Proc. Zool. Soc. Lond., 1867, 144, part (Bluefields, Nicaragua); Ibis, 1872, 317 (Chontales, Nicaragua).—ELLIOT, Auk, vii, 1890, 181 (monogr.).—SCLATER, Cat. Birds Brit. Mus., xv, 1890, 133 (Chontales, Nicaragua; Panamá).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1891, 182, part, pl. 48, fig. 1 (Bluefields and Chontales, Nicaragua; Costa Rica; Lion Hill and Rio Truando, Panamá; Colombia?).—RICHMOND, Proc. U. S. Nat. Mus., xvi, 1893, 498 (Rio Escondido, Nicaragua).—UNDERWOOD, Ibis, 1896, 440 (Volcán de Miravalles, Costa Rica).

[*Dendroornis*] *lacrymosa* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 68.—SHARPE, Hand-list, iii, 1901, 79, part (Nicaragua to Panamá).

[*Dendrocolaptes*] *lacrymosus* GRAY, Hand-list, i, 1869, 178, no. 2420.

*Xiphorhynchus lacrymosus lacrymosus* OBERHOLSER, Smithsonian Misc. Coll., xlviii, no. 1579, May 13, 1905, 63.

*Xiphorhynchus lacrymosus eximius* (not *Dendroornis lachrymosa eximia* Hellmayr) CARRIKER, Ann. Carnegie Mus., vi, 1910, 654, part (Bonilla, Reventazón, Guácimo, Cuábre, Rio Sicsola, El Hogár, and La Vijagua, Costa Rica; habits).

### XIPHORHYNCHUS LACHRYMOSUS EXIMIUS (Hellmayr).

#### STRIPED-BELLIED WOODHEWER.

Similar to *X.l. lachrymosus*, but under parts of body more distinctly marked with black and buff (the whole abdomen conspicuously striped with these colors).

*Adult male*.—Length (skins), 233–252 (242); wing, 127–131.5 (129.1); tail, 98–110 (104); culmen, 35.5–36.5 (36.1); tarsus, 23–24 (23.4); middle toe, 19–20 (19.5).<sup>a</sup>

*Adult female*.—Length (skins), 223–231 (227); wing, 114.5–124 (117.8); tail, 87.5–93.5 (90.3); culmen, 35–40 (38); tarsus, 24.5–25 (24.7); middle toe, 19–20 (19.7).<sup>b</sup>

<sup>a</sup> Four specimens, from Costa Rica.

<sup>b</sup> Three specimens, from Costa Rica.



Southwestern Costa Rica (Pozo Azul de Pirris; Pozo del Rio Grande; El Pozo de Térraba) and adjacent portion of western Panamá (Divala).

*Dendornis lacrymosa* (not *D. lacrymosus* Lawrence) SALVIN, Proc. Zool. Soc. Lond., 1867, 144, part (Santiago de Veragua, Panamá); 1870, 193 (Volcán de Chiriquí and Bugaba, Panamá).—SCLATER, Cat. Birds Brit. Mus., xv, 1890, 133, part (Bugaba and Santiago de Veragua, Panamá).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1891, 182, part (Volcán de Chiriquí, Bugaba, Bibaláz, and Santiago de Veragua, Panamá).

*Dendornis lacrymosa* ZELEDÓN, Anal. Mus. Nac. Costa Rica, i, 1887, 114, part (Las Trojas, Costa Rica).

*Dendornis lacrimosa* CHERRIE, Expl. Zool. Merid. Costa Rica, 1893, 40 (Palmár and Boruca, s. w. Costa Rica).

*Dendornis lacrymosa eximia* HELLMAYR, Journ. für Orn., Oct., 1903, 537 (Boruca, s. w. Costa Rica; coll. Vienna Mus.).—BANGS, Auk, xxiv, 1907, 299 (Pozo del Rio Grande, s. w. Costa Rica).

*Xiphorhynchus lacrymosus eximius* OBERHOLSER, Smithsonian Misc. Coll., xlviii, no. 1579, May 13, 1905, 63.—CARRIKER, Ann. Carnegie Mus., vi, 1910, 654, part (Pozo Azul de Pirris and El Pozo de Térraba, s. w. Costa Rica).

#### XIPHORHYNCHUS FLAVIGASTER FLAVIGASTER Swainson.

##### SWAINSON'S WOODHEWER.

*Adults (sexes alike).*—Pileum and hindneck sooty black, each feather with a conspicuous mesial broad guttate streak or spot of buff or clay color; back and scapulars raw-umber brown, each feather with a conspicuous broad mesial streak of buff or clay color, inclosed within a narrower bordering streak of black; rump more tawny brown passing into dull tawny or tawny-ochraceous on upper tail-coverts, the longer feathers of which are tinged with cinnamon-rufous and with more or less distinct narrower mesial streaks of paler, sometimes margined with blackish; tail uniform deep cinnamon-rufous or rufous-chestnut; lesser wing-coverts rufous-brown, with very indistinct mesial streaks of paler; middle coverts raw-umber brown (nearly like color of back), with mesial streaks of buff or clay color, margined laterally with black; greater and primary coverts plain raw-umber brown, slightly more rufescent than color of black; remiges plain dull cinnamon-rufous, becoming paler and more brownish (less rufescent) on outer primaries; superciliary region buff, the feathers narrowly margined with blackish; suborbital and auricular regions buff, the feathers of the former margined, those of the latter streaked, with black; malar region, chin, and throat clear buff, the feathers of extreme lower throat usually narrowly margined with dusky; a conspicuous but more or less interrupted broad submalar streak of sooty black; chest buff (usually slightly paler than color of throat, the feathers margined with dusky or blackish, producing a squamate effect; rest of under parts light buffy brown (nearly isabella color) broadly streaked with light buff,

these buffy streaks often margined laterally with a line of blackish or dusky; under wing-coverts uniform ochraceous-buff; inner webs of remiges light tawny-ochraceous, the terminal portion (extensively) of five outer primaries grayish brown or dusky; bill pale yellowish horn color or dull buffy whitish, darker (more horn colored) on basal portion of maxilla; iris brown; legs and feet dusky horn color (in dried skins).

*Young*.—Similar to adults but general coloration darker, with blackish streaks on back and under parts heavier; feathers of chest more broadly and distinctly margined with black and texture of plumage more lax.

*Adult male*.—Length (skins), 219–259 (237); wing, 100.5–120 (113.3); tail, 88–104.5 (95.2); culmen, 37–42.5 (39.9); tarsus, 21–25 (23.3); middle toe, 16.5–19 (18.3).<sup>a</sup>

*Adult female*.—Length (skins), 208–255 (231); wing, 102.5–121.5 (110); tail, 84–102 (92.5); culmen, 35–43.5 (39.7); tarsus, 21.5–24.5 (22.9); middle toe, 16.5–19.5 (17.8).<sup>b</sup>

•  
Southeastern Mexico, in States of Tamaulipas (Alta Mira; Tampico; Tamesi), Vera Cruz (Playa Vicente; Rivera; Jalapa; Orizaba; Miradór; Córdoba; San Lorenzo near Córdoba; Misantla; Colipa; Plan del Rio; Otatitlán; Santa Lucrécia; Vega del Casadero; Hacienda Tortugas; Pasa Nueva; Buena Vista; Tolosa; Carrizál; Mot-

<sup>a</sup> Thirty-eight specimens.

<sup>b</sup> Twenty-five specimens.

| Locality.                                        | Wing. | Tail. | Culmen. | Tarsus. | Middle toe. |
|--------------------------------------------------|-------|-------|---------|---------|-------------|
| MALES.                                           |       |       |         |         |             |
| Eight adult males from Tamaulipas.....           | 116.1 | 98.9  | 40.9    | 23.3    | 18          |
| Five adult males from Vera Cruz.....             | 112.7 | 98    | 39.8    | 23.3    | 18.4        |
| Four adult males from San Luis Potosí.....       | 112.1 | 92    | 40.4    | 23.1    | 18.7        |
| Three adult males from Puebla.....               | 114.3 | 96.3  | 39.7    | 23.7    | 18          |
| Four adult males from Oaxaca.....                | 116.1 | 93.6  | 40.2    | 24.2    | 18.4        |
| Two adult males from Guatemala.....              | 119.7 | 99.5  | 39.7    | 23.7    | 19.7        |
| Eight adult males from British Honduras.....     | 107.9 | 91    | 38.5    | 22.9    | 18.1        |
| Two adult males from Honduras.....               | 116   | 96.2  | 40      | 23.7    | 19          |
| Two adult males from Nicaragua.....              | 111.2 | 91.2  | 42      | 22.5    | 17.2        |
| FEMALES.                                         |       |       |         |         |             |
| Eight adult females from Tamaulipas.....         | 112.4 | 94.2  | 40.2    | 22.9    | 18.2        |
| Six adult females from Vera Cruz and Puebla..... | 109.8 | 92.2  | 40.2    | 23.5    | 17.1        |
| Three adult females from Oaxaca.....             | 112.5 | 95.8  | 39.8    | 23.2    | 18.8        |
| One adult female from Tabasco.....               | 108   | 85.5  | 41      | 23.5    | 17.5        |
| One adult female from Chiapas.....               | 105   | 86.5  | .....   | 21.5    | 18          |
| One adult female from Guatemala.....             | 102.5 | 87    | 38      | 21.5    | 17          |
| Two adult females from British Honduras.....     | 108.7 | 91.5  | 36.7    | 22.2    | 17          |
| One adult female from Honduras.....              | 111   | 95.5  | 39      | 22      | 16.5        |
| One adult female from Salvador.....              | 107   | 86.5  | 40      | 23      | 18          |
| One adult female from Nicaragua.....             | 116   | 95.5  | 39      | 22.5    | 18          |

zorongo; Llave), Puebla (Chietla; Metlaltoyuca), Mexico (Temiscáltepec), San Luis Potosí (Vallés), Oaxaca (Santa Efigénia; Tehuántepec; Tapaná; Guichicovi; Cacoprieto; Chimalapa; Ishuatlán; Tuxtepec; mountains near Santo Domingo), Guerrero (Papayo), Tabasco (Teapa; Frontera), Campeche (Apazote; Yohaltán; Canasayá), and Chiapas (San Benito), and through Guatemala (Choctúm; sources of Río de la Pasión; Sabana Grande; Volcán de Agua; Retalhuleu; Los Amates, Yzabál; Patulúl, Sololá; Telemán), British Honduras (Belize; Orange Walk; Cayo; Southern Pine Ridge; Toledo District; near Mánatee Lagoon), Honduras (San Pedro; Truxillo; Santa Ana) and Salvador (Acajutla; Volcán San Miguél; La Libertad) to Nicaragua (Realejo; Chinandega; Sucuyá; Managua; San Juan del Sur).

*Xiphorhynchus flavigaster* SWAINSON, Philos. Mag., new ser., i, 1827, 440 (Temiscáltepec, Mexico).

*X[iphorhynchus] flavigaster* BONAPARTE, Consp. Av., i, 1850, 208 (Realejo, Nicaragua).

*Dryocopus flavigaster* DES MURS, Icon. Orn., livr. 9, July, 1847, text to pl. 52 (Mexico).

*Nasica flavigaster* LAFRESNAYE, Rev. et Mag. Zool., 1850, 383.

*Dendroornis flavigaster* SCLATER, Proc. Zool. Soc. Lond., 1856, 289 (Córdova, Vera Cruz); 1859, 381 (Playa Vicente, Vera Cruz).—SALVIN and SCLATER, Ibis, 1860, 398 (Choctúm, Guatemala).—SUMICHRIST, La Naturaleza, v, 1881, 248 (Cacoprieto, Tapaná, and Sta. Efigénia, Oaxaca).—CHAPMAN, Bull. Am. Mus. N. H., x, 1898, 32 (Jalapa, Vera Cruz).—DEARBORN, Pub. 125, Field Mus. N. H., 1907, 108 (Los Amates and Patulúl, Guatemala; crit.).

*Dendroornis flavigaster* FERRARI-PEREZ, Proc. U. S. Nat. Mus., ix, 1886, 156 (Chietla, Puebla).—ELLIOT, Auk, vii, 1890, 178, part (monogr.; excl. syn. *D. mentalis* Lawrence).—RICHMOND, Proc. U. S. Nat. Mus., xviii, 1896, 630 (Alta Mira, Tamaulipas).

*Xiphorhynchus flavigaster flavigaster* OBERHOLSER, Smithsonian Misc. Coll., xlvi, no. 1579, May 13, 1905, 63.

*Dryocopus eburneiostris* "LESSON, Echo du Monde Savant, 1843" [Des Murs, Icon. Orn., livr. 9, July, 1847, pl. 52 and in synonymy of *Dryocopus flavigaster*] (Realejo, Nicaragua).—DES MURS, Icon. Orn., livr. 9, July, 1847, pl. 52.

*Dendroornis eburneiostris* EYTON, Jardine's Contr. Orn., 1852, 23.—BONAPARTE, Consp. Voluc. Anisod., 1854, 11.—CABANIS and HEINE, Mus. Hein., ii, 1859, 37.—SCLATER, Cat. Am. Birds, 1862, 164 (Guatemala; Mexico); Cat. Birds Brit. Mus., xv, 1890, 130, part (Cacoprieto and Sta. Efigénia, Oaxaca; Belize, Brit. Honduras; sources Río de la Pasión, Choctúm, Sabana Grande, Volcán de Agua, and Retalhuleu, Guatemala; San Pedro, Honduras).—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1870, 834, 840 (San Pedro, Honduras).—LAWRENCE, Bull. U. S. Nat. Mus., no. 4, 1876, 25 (Guichicovi, Ishuatlán, Tapaná, and Sta. Efigénia, Oaxaca).—BOUCARD, Ann. Soc. Linn. Lyon, 1878, 38 (Guatemala).—NUTTING, Proc. U. S. Nat. Mus., vi, 1883, 375, 385 (San Juan del Sur and Sucuyá, Nicaragua).—RIDGWAY, Proc. U. S. Nat. Mus., x, 1887, 580 (Truxillo, Honduras).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1891, 178, part (Alta Mira, Tamesi, and Tampico, Tamaulipas; and numerous other Mexican localities, etc.; excl. syn. *D. mentalis* Law-



rence).—MENEGAUX and HELLMAYR, Mem. Soc. N. H. d'Autun, xix, 1906, 101, part (type, from Realejo, Nicaragua, in Paris Mus.; crit.).

*Xiphorhynchus flavigaster eburneiostris* OBERHOLSER, Smithsonian Misc. Coll., xlviii, no. 1579, May 13, 1905, 63.

*Premnocopus eburneiostris* REICHENBACH, Handb. Spec. Orn., 1853, 186, pl. 603, fig. 4059.

*Dendrocolaptes eburneiostris* GRAY, Hand-list, i, 1869, 177, no. 2403.

[*Dendroornis*] *eburneiostris* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 68, part.—SHARPE, Hand-list, iii, 1901, 78, part.

*D[endroornis] eburneiostris* CABANIS and HEINE, Mus. Hein., ii, 1859, 37 (Mexico).—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1870, 839 (Mexico; Guatemala; Honduras).

*Picolaptes validirostris* EYTON, Jardine's Contr. Orn., 1851, 75 (no locality given; coll. Knowsley Mus.).

[*Picolaptes*] *validirostris* GRAY, Hand-list, i, 1869, 179, no. 2447.

### XIPHORHYNCHUS FLAVIGASTER MENTALIS (Lawrence).

#### GRAYSON'S WOODHEWER.

Similar to *X. f. flavigaster* but decidedly paler throughout, the prevailing color of pileum and hindneck deep grayish brown instead of blackish, that of back, etc., light grayish buffy brown (nearly broccoli brown) instead of raw-umber, streaks paler buff, and feathers on middle of throat usually distinctly margined or edged with grayish brown, often producing a broken patch of that color.

*Adult male*.—Length (skins), 222–243 (231); wing, 103–119 (114.4); tail, 81–100 (91); culmen, 38–42.5 (40.4); tarsus, 22–23.5 (22.9); middle toe, 17–19.5 (18.2).<sup>a</sup>

*Adult female*.—Length (skins), 200–220 (214); wing, 99.5–109.5 (106.1); tail, 75.5–90 (82.7); culmen, 38.5–42 (39.7); tarsus, 21–23 (22.3); middle toe, 17–18.5 (17.7).<sup>b</sup>

Western Mexico, in States of Durango (Chacalá), Jalisco (Las Palmas; Barranca Veltrán; San Sebastián), Sinaloa (Mazatlán; Presidio de Mazatlán; Juan Lisiarraga Mountains, 5,500 feet; Los Píeles; Arroyo de Limones, 3,500 feet; Quotla, near Rosário; Culiacán; Plomosas; Escuinapa; Rio Juan Gomez), Colima (Manzanillo; Santiago; Sierra Madre), Michoacán (Cayaco), Guerrero (Papayo), Durango (Chacalá), and Territory of Tepic (Santiago; Rio Santiago; San Diego; Tepic).

*Dendroornis mentalis* Baird, MS. LAWRENCE, Ann. Lyc. Nat. Hist. N. Y., viii, May, 1867, 481 (Mazatlán, Sinaloa, w. Mexico; coll. U. S. Nat. Mus.); Mem. Bost. Soc. N. H., ii, 1874, 285 (Mazatlán; Tepic).—SANCHEZ, An. Mus. Nac. Mexico, i, 1877, 97 (Mazatlán).—SCLATER, Cat. Birds Brit. Mus., xv, 1890, 131 (Presidio, near Mazatlán).—JOUY, Proc. U. S. Nat. Mus., xvi, 1893, 784 (Barranca Veltrán, s. Jalisco).

*Dendroornis flavigaster mentalis* MILLER (W. De W.), Bull. Am. Mus. N. H., xxi, Nov. 24, 1905, 355 (Los Píeles, etc., s. Sinaloa; crit.).

<sup>a</sup> Twelve specimens.

<sup>b</sup> Eight specimens.

*Xiphorhynchus flavigaster mentalis* OBERHOLSER, Smithsonian Misc. Coll., xlviii, no. 1579, May 13, 1905, 63.

[*Dendrocolaptes*] *mentalis* GRAY, Hand-list, i, 1869, 177, no. 2413.

*Dendroornis flavigaster* (not *Xiphorhynchus flavigaster* Swainson) ELLIOT, Auk, vii, 1890, 178, part (Mazatlán; Manzanillo; monogr.).

*Dendroornis eburneirostris* (not *Dryocopus eburneirostris* "Lesson") SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1891, 178, part (Mazatlán; Tepic; Santiago de Tepic; Santiago de Colima; Tecolapa).

[*Dendroornis*] *eburneirostris* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 68, part.—SHARPE, Hand-list, iii, 1901, 78, part.

### XIPHORHYNCHUS FLAVIGASTER MEGARHYNCHUS (Nelson).

#### LARGE-BILLED WOODHEWER.

Similar in coloration to *X. f. mentalis* but larger, especially the bill.

*Adult male*.—Length (skins), 239–265 (249); wing, 114–123 (117.4); tail, 89.5–96 (92.3); culmen, 42–45.5 (43.2); tarsus, 23–25 (23.8); middle toe, 18.5–19 (18.8).<sup>a</sup>

*Adult female*.—Length (skins), 232–253 (242); wing, 110–111 (110.5); tail, 88–90 (89); culmen, 42–42.5 (42.2); tarsus, 22.5–23 (22.7); middle toe, 18–18.5 (18.2).<sup>b</sup>

*Dendroornis flavigaster megarhynchus* NELSON, Auk, xvii, July, 1900, 265 (Puerto Angel, Oaxaca; coll. U. S. Nat. Mus.).

[*Dendroornis*] *megarhyncha* SHARPE, Hand-list, iii, 1901, 78.

*Xiphorhynchus flavigaster megarhynchus* OBERHOLSER, Smithsonian Misc. Coll., xlviii, no. 1579, May 13, 1905, 63.

Southwestern Mexico, in States of Guerrero (El Naranjo; Acahuitzotla; Sihuatzenjo; La Unión) and western Oaxaca (Puerto Angel).

### XIPHORHYNCHUS FLAVIGASTER YUCATANENSIS Ridgway.

#### YUCATAN WOODHEWER.

Very similar in coloration to *X. f. mentalis*, but averaging very slightly smaller (with slightly larger bill and feet), and throat always immaculate pale buff; much paler and grayer than *X. f. flavigaster*.

*Adult male*.—Length (skins), 228–248 (238); wing, 104–118 (110.2); tail, 84–100 (90.9); culmen, 40–42 (40.8); tarsus, 22.5–24 (23.2); middle toe, 17–18.5 (17.5).<sup>c</sup>

*Adult female*.—Length (skins), 217–232 (226); wing, 100–111 (106.4); tail, 85–94.5 (89.4); culmen, 39–43 (40.6); tarsus, 21–23 (22.1); middle toe, 17.<sup>a</sup>

Yucatan (Chichen-Itza; Puerto Morelos; Izalám; La Vega; Temáx; Mérida; Tuloom; Peto; Buctzotz; Tabi; Meco Island).<sup>d</sup>

*Dendroornis eburneirostris* (not *Dryocopus eburneirostris* "Lesson") LAWRENCE, Ann. Lyc. N. Y., ix, 1869, 201 (n. Yucatan).—BOUCARD, Proc. Zool. Soc. Lond., 1883, 450 (Yucatan; habits).—SCLATER, Cat. Birds Brit. Mus., xv, 1890,

<sup>a</sup> Five specimens.

<sup>b</sup> Two specimens.

<sup>c</sup> Nine specimens.

<sup>d</sup> Specimens from Meco Island not seen by me.

130, part (Tuloom and Meco I., Yucatan).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1891, 178, part (Peto, Buctzotz, Tuloom, Tabi, Meco I., etc., Yucatan).—MENEGAUX and HELLMAYR, Mem. Soc. N. H. d'Autun, xix, 1906, 101, part (Izamál, Yucatan).

[*Dendroornis eburneiostris* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 68, part.—SHARPE, Hand-list, iii, 1901, 78, part.

*Dendroornis flavigaster* (not *Xiphorhynchus flavigaster* Swainson) SALVIN, Ibis, 1889, 364 (Tuloom and Meco I., Yucatan).—ELLIOT, Auk, vii, 1890, 178, part (Temáx and Mérida, Yucatan).—COLE, Bull. Mus. Comp. Zool., 1, 1906, 132 (Chichen-Itza, Yucatan).

*Xiphorhynchus flavigaster yucatancensis* RIDGWAY, Proc. Biol. Soc. Wash., xxii, Apr. 17, 1909, 73 (Temáx, Yucatan; coll. U. S. Nat. Mus.).

### XIPHORHYNCHUS STRIATIGULARIS (Richmond).

#### STRIPED-THROATED WOODHEWER.

Slightly resembling *X. flavigaster* but differing greatly in having the whole throat conspicuously streaked; buff streaks of chest, etc., margined laterally with a chain-like streak of blackish; wing-coverts conspicuously streaked with black and buff, and buff streaks of back much broader.

*Adult female.*<sup>a</sup>—Pileum and hindneck sooty black, each feather with a broad mesial guttate streak of buff or clay color; back and scapulars brown (between light olive and raw-umber) each feather with a broad mesial streak of brownish buff or clay color, broadly margined with black; lesser and middle wing-coverts similar, but buffy mesial streaks much narrower; greater coverts similar but with still narrower streaks; remiges plain deep cinnamon-rufous or rufous-chestnut, the terminal portion of inner webs of primaries (except the innermost) grayish brown; rump plain light cinnamon-rufous or rufous tawny, the upper tail-coverts deeper cinnamon-rufous, with indistinct shaft-streaks of paler; tail (including shafts of rectrices) plain deep cinnamon-rufous or rufous-chestnut; sides of head and neck broadly streaked with buff and sooty blackish; chin, throat, and foreneck similarly streaked, the streaks becoming gradually broader and more sharply defined, and the feathers edged with light buffy grayish brown, on lower foreneck; chest, breast, etc., similarly streaked, but the blackish streaks narrower and more irregular and grayish brown edgings to the feathers broader, the streaks becoming gradually narrower and less distinct posteriorly; under wing-coverts mixed pale cinnamon-rufous and light buffy brownish (the latter prevailing along edge of wing, where streaked with buffy and blackish); inner webs of remiges pale cinnamon-rufous or vinaceous-cinnamon, the terminal portion (extensively) of outer primaries grayish brown; bill pale yellowish horn color, the maxilla more brownish basally; feet light horn brownish (in dried skins);

<sup>a</sup> The adult male is unknown, but judging from the general rule in this group the sexes are probably alike in color.



length (skin), 230; wing, 105; tail, 87; exposed culmen, 37.5; tarsus, 23; middle toe, 17.

Eastern Mexico, in southern part of State of Tamaulipas (Alta Mira).

*Dendornis striatigularis* RICHMOND, Proc. U. S. Nat. Mus., xxii, no. 1200, May, 1900, 317 (Alta Mira, Tamaulipas; coll. U. S. Nat. Mus.).

[*Dendornis*] *striatigularis* SHARPE, Hand-list, iii, 1901, 78.

*Xiphorhynchus striatigularis* OBERHOLSER, Smithsonian Misc. Coll., xlviii, no. 1579, May 13, 1905, 63.

### XIPHORHYNCHUS NANUS NANUS (Lawrence).

#### LAWRENCE'S WOODHEWER.

*Adults (sexes alike).*—Pileum and hindneck dark sooty brown or sooty blackish, each feather with a broad mesial guttate streak or mark of brownish buff; back and scapulars olive-brown (between raw-umber and mummy), the feathers of upper back with a broad mesial streak of brownish buff or pale tawny, margined with blackish; rump and upper tail-coverts plain cinnamon-rufous; tail, including shafts of rectrices, chestnut; remiges deep cinnamon-rufous, the primaries and distal secondaries edged (more or less distinctly) with grayish brown or olive; wing-coverts plain brown, nearly if not quite concolor with back; supra-auricular region pale brownish buff or dull buffy whitish, the feathers narrowly margined with dusky; auricular region streaked with light brown and dusky; suborbital region with feathers light buff margined with dusky, the malar region similar but with dusky margins to feathers much less distinct (partly obsolete); chin and throat plain light brownish buff or dull pinkish buff, the feathers of extreme lower throat narrowly margined with dusky; feathers of chest light brownish buff or dull pinkish buff centrally, those of upper chest wholly of this color except for a narrow but distinct margin of dusky, those of lower chest with a broad median ovate or elliptical stripe of buff margined laterally by a blackish line, the edges (more or less broadly) light buffy brown; rest of under parts light buffy brown (nearly wood brown or isabella color), the median portion of breast and abdomen usually with narrow and indistinct streaks of paler; under wing-coverts ochraceous-buff, the inner webs of remiges deeper, inclining to cinnamon-rufous, the longer primaries with terminal portion dusky; maxilla blackish brown, mandible pale horn color or dull yellowish (in dried skins); feet horn color or dusky (in dried skins).

*Young.*—Similar to adults but markings of under parts rather more strongly contrasted; only to be distinguished with certainty, however, by the softer and more lax texture of the plumage.

*Adult male*.—Length (skins), 211–226 (222); wing, 97–111 (105.7); tail, 77.5–92.5 (87.7); culmen, 34–39 (36.6); tarsus, 21.5–23.5 (22.6); middle toe, 17–19 (17.9).<sup>a</sup>

*Adult female*.—Length (skins), 210–227 (217); wing, 98–109 (104); tail, 81–91 (85); culmen, 34.5–39.5 (36.8); tarsus, 22–23.5 (22.9); middle toe, 17–18 (17.5).<sup>b</sup>

Eastern Panamá (Lion Hill; San Pablo Station; Colón; Panamá; Sabana de Panamá; Natá, Coelé) and Colombia (Minca, Don Diego, and Cacagualito, Santa Marta; Rio Lima; Bogotá?).

*Dendroornis guttatus* (not *Dendrocolaptes guttatus* Lichtenstein) CASSIN, Proc. Ac. Nat. Sci. Phila., 1860, 193 (Lion Hill, Panamá).—LAWRENCE, Ann. Lyc. N. Y., vii, 1862, 292 (Lion Hill).

*Dendroornis pardalotus* (not *Dendrocopus pardalotus* Vieillot) LAWRENCE, Ann. Lyc. N. Y., viii, 1863, 482 (Isth. Panamá).

*Dendroornis nana* LAWRENCE, Ibis, April, 1863, 181 (Lion Hill, Panamá; coll. G. N. Lawrence); Ann. Lyc. Nat. Hist. N. Y., viii, 1863, 4, 482 (do.).—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1864, 355 (Lion Hill; crit.).—ELLIOT, Auk, vii, 1890, 174, part (Panamá; monogr.).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1891, 180, part (Lion Hill, San Pablo Station, and Panamá, Isth. Panamá).—BANGS, Proc. New Engl. Zool. Club, ii, 1900, 25 (Loma del León, Panamá).

[*Dendroornis*] *nana* SHARPE, Hand-list, iii, 1901, 78, part (Panamá).

*Dendroornis nana nana* BANGS, Bull. Mus. Comp. Zool., xxxix, no. 6, July, 1903, 151 (Panamá; diagnosis).

*Xiphorhynchus nanus nanus* OBERHOLSER, Smithsonian Misc. Coll., xlviii, no. 1579, May 13, 1905, 63.—THAYER and BANGS, Bull. Mus. Comp. Zool., xlvii, 1906, 217 (Sabana de Panamá).

[*Dendrocolaptes*] *nanus* GRAY, Hand-list, i, 1869, 177, no. 2408.

*Dendroornis susurrans* (not *Dendrocolaptes susurrans* Jardine) SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1870, 839, part (Panamá; crit.).—SALVIN, Proc. Zool. Soc. Lond., 1883, 424 (Panamá).—SCLATER, Cat. Birds Brit. Mus., xv, 1890, 133, part (San Pablo and Paraiso stations and Panamá City, Panamá).

[*Dendroornis*] *susurrans* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 68, part.

*Dendroornis lawrencei* RIDGWAY, Proc. U. S. Nat. Mus., x, sig. 32, Aug. 6, 1888, 509 (Panamá; coll. U. S. Nat. Mus.).—SCLATER, Ibis, 1889, 353 (crit.).

<sup>a</sup> Twelve specimens.

<sup>b</sup> Five specimens, from eastern Panamá.

| Locality.                                            | Wing. | Tail. | Culmen. | Tarsus. | Middle toe. |
|------------------------------------------------------|-------|-------|---------|---------|-------------|
| MALES.                                               |       |       |         |         |             |
| Ten adult males from eastern Panamá (Lion Hill)..... | 105.9 | 87.5  | 36.9    | 22.7    | 18          |
| Two adult males from Colombia (Santa Marta).....     | 105.7 | 88    | 34      | 22.3    | 17.5        |

## XIPHORHYNCHUS NANUS COSTARICENSIS (Ridgway).

## TUCURRÍQUI WOODHEWER.

Similar to *X. n. nanus*, but coloration averaging slightly deeper.

*Adult male*.—Length (skins), 200–243 (220); wing, 95.5–114.5 (105.8); tail, 83–104 (90.3); culmen, 34.5–39 (36.7); tarsus, 21.5–24 (22.8); middle toe, 17–19 (17.7).<sup>a</sup>

*Adult female*.—Length (skins), 185–222 (205); wing, 94–102 (97.9); tail, 77–85.5 (81.8); culmen, 29.5–39 (36); tarsus, 21–23 (22); middle toe, 16–18 (17).<sup>b</sup>

Western Panamá (Calovévora; Bugaba; Divala), through Costa Rica (Angostura; San Carlos; San Juan Valley; Tucurríqui; Guayabo; Rio Reventazón; Rio Sísola; Talamanca; Puerto Limón; Siquirres; Guácimo; Guápiles; Cuábre; El Hogár; Jiménez; Bonilla; Pacuare; Volcán de Turrialba; Volcán de Miravalles; Tenório; Barranca de Puntarenas; Barranca de Boruca; Bebedero; Pozo del Rio Grande; Pozo Azul de Pirrís; El Pozo de Térraba; Térraba; Buenos Aires; El General; Boruca, Paso Real, and Lagarto, Boruca), eastern Nicaragua (Greytown; Rio Escondido), and southeastern Honduras (Rio Segovia).

*Dendroornis pardalotus* (not *Dendrocopus pardalotus* Vieillot) LAWRENCE, Ann. Lyc. N. Y., viii, 1867, 180 (Greytown, Nicaragua); ix, 1868, 107 (Tucurríqui, Costa Rica).—FRANTZIUS, Journ. für Orn., 1869, 305 (Costa Rica).

*Dendroornis nana* (not of Lawrence) SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1870, 837 (Calovévora, Panamá).—SALVIN, Proc. Zool. Soc. Lond., 1870, 193 (Calovévora and Bugaba, Panamá; crit.).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1891, 180, part (Rio Segovia, Honduras; Tucurríqui and San Carlos, Costa Rica; Bugaba and Calovévora, Panamá).—RICHMOND, Proc. U. S. Nat. Mus., xvi, 1893, 498 (Greytown and Rio Escondido, Nicaragua; crit.).—UNDERWOOD, Ibis, 1896, 440 (Volcán de Miravalles, Costa Rica).—ELLIOT, Auk, vii, 1890, 174, part.

<sup>a</sup> Twenty-nine specimens.

<sup>b</sup> Eighteen specimens.

| Locality.                                                               | Wing. | Tail. | Culmen. | Tarsus. | Middle toe. |
|-------------------------------------------------------------------------|-------|-------|---------|---------|-------------|
| MALES.                                                                  |       |       |         |         |             |
| Three adult males from eastern Nicaragua.....                           | 102.8 | 91.2  | 36      | 22.7    | 17.3        |
| Nine adult males from eastern Costa Rica.....                           | 106   | 90.8  | 37.6    | 23.2    | 17.5        |
| Eleven adult males from western Costa Rica.....                         | 107.6 | 90.4  | 36.8    | 22.8    | 17.9        |
| Six adult males from western Panamá.....                                | 103   | 88.9  | 36.6    | 22.6    | 17.8        |
| Ten adult males ( <i>X. n. nanus</i> ) from eastern Panamá.....         | 105.9 | 87.5  | 36.9    | 22.7    | 18          |
| Two adult males ( <i>X. n. nanus</i> ) from Colombia (Santa Marta)..... | 105.7 | 88    | 34      | 22.3    | 17.5        |
| Two adult males ( <i>X. n. confinis</i> ) from Honduras.....            | 104.7 | 90    | 36.5    | 22      | 17.3        |
| FEMALES.                                                                |       |       |         |         |             |
| Two adult females from eastern Nicaragua.....                           | 94.7  | 81    | 31.7    | 22      | 17.5        |
| Eight adult females from eastern Costa Rica.....                        | 99.2  | 82.3  | 37.1    | 22.1    | 17.1        |
| Eight adult females from western Costa Rica.....                        | 97.5  | 81.4  | 35.9    | 22      | 16.9        |
| One adult female ( <i>X. n. confinis</i> ) from Guatemala.....          | 93.5  | 74    | 36      | 20.5    | 16.5        |



[*Dendroornis*] *nana* SHARPE, Hand-list, iii, 1901, 78, part.

*Dendroornis susurrans* (not *Dendrocolaptes susurrans* Jardine) SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1870, 839, part (Veragua; Costa Rica; crit.).—BOUCARD, Proc. Zool. Soc. Lond., 1878, 60 (San Carlos, Costa Rica).—SCLATER, Cat. Birds Brit. Mus., xv, 1890, 133, part (Angostura, Costa Rica; Calovévora and Bugaba, Panamá).

[*Dendroornis*] *susurrans* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 68, part.

*Dendroornis lawrencei costaricensis* RIDGWAY, Proc. U. S. Nat. Mus., x, sig. 32, Aug. 6, 1888, 510 (Tucurríqui, Costa Rica; coll. U. S. Nat. Mus.).—ZELEDÓN, Anal. Mus. Nac. Costa Rica, i, 1888, 114.

*Dendroornis lawrencii costaricensis* SCLATER, Ibis, 1889, 353 (crit.).

*Dendroornis lawrencei costaricensis* LANTZ, Trans. Kansas Acad. Sci. for 1896-97 (1899), 221, part (San Juan Valley, Costa Rica).

*Dendroornis nana costaricensis* CHERRIE, Proc. U. S. Nat. Mus., xiv, 1891, 532 (crit.).—BANGS, Bull. Mus. Comp. Zool., xxxix, 1903, 151 (diagnosis); Auk, xxiv, 1907, 299 (Boruca, Paso Real, Pozo del Río Grande, Barranca, Lagarto, and Barranca de Puntarenas, w. Costa Rica).—FERRY, Pub. 146, Field Mus. N. H., orn. ser., i, no. 6, 1910, 270 (Guayabo, Costa Rica).

*Dendroornis nana (costaricensis?)* CHERRIE, Expl. Zool. Merid. Costa Rica, 1893, 40 (Palmár, Lagarto, Boruca, Térraba, and Buenos Aires, s. w. Costa Rica).

*Xiphorhynchus nanus costaricensis* OBERHOLSER, Smithsonian Misc. Coll., xlviii, no. 1579, May 13, 1905, 63.

*Xiphorhynchus nanus costaricensis* CARRIKER, Ann. Carnegie Mus., vi, 1910, 652 (Costa Rica; habits).

### XIPHORHYNCHUS NANUS CONFINIS (Bangs).

#### WHITE-THROATED WOODHEWER.

Similar to *X. n. nanus*, but color of chin and throat very much paler dull buffy white or very pale buff.

*Adult male*.—Length (skins), 217-232 (224); wing, 101.5-108 (104.7); tail, 86-94 (90); culmen, 35.5-37.5 (36.5); tarsus, 21.5-22.5 (22); middle toe, 17-17.5 (17.2).<sup>a</sup>

*Adult female*.—Length (skin), 200; wing, 93.5; tail, 74; culmen, 36; tarsus, 20.5; middle toe, 16.5.<sup>b</sup>

Honduras (Medina; Céiba) and Guatemala (Santo Tomas; Los Amates, Yzabál; Chapulco).

*Dendroornis susurrans* (not *Dendrocolaptes susurrans* Jardine) SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1870, 839 (Honduras).—SCLATER, Cat. Birds Brit. Mus., xv, 1890, 133, part (Medina, Honduras).

*Dendroornis nana* (not of Lawrence) SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1891, 180, part (Medina, Honduras).

[*Dendroornis*] *nana* SHARPE, Hand-list, iii, 1901, 78, part (Honduras).

*Dendroornis lawrencii costaricensis* (not of Ridgway) LANTZ, Trans. Kansas Acad. Sci. for 1896-97 (1899), 221, part (Santo Tomas, Guatemala).

*Dendroornis nana confinis* BANGS, Bull. Mus. Comp. Zool., xxxix, no. 6, July, 1903, 150 (Céiba, Honduras, sea-level; coll. E. A. and O. Bangs).—DEARBORN, Pub. 125, Field Mus. N. H., 1907, 108 (Los Amates, e. Guatemala; crit.).

*Xiphorhynchus nanus confinis* OBERHOLSER, Smithsonian Misc. Coll., xlviii, no. 1579, May 13, 1905, 63.

<sup>a</sup>Two specimens, from Honduras. <sup>b</sup>One specimen, from Guatemala (Chapulco).

**XIPHORHYNCHUS ERYTHROPYGIUS (Sclater).****SPOTTED WOODHEWER.**

*Adults (sexes alike)*.<sup>a</sup>—Pileum and hindneck deep olive, the feathers margined, more or less distinctly, with dusky and with narrow mesial streaks of pale buffy; back and scapulars olive-brown (nearly raw-umber), the feathers (at least the more anterior ones) marked with a mesial guttate or broadly fusiform streak of pale buff; rump and upper tail-coverts deep cinnamon-rufous, the tail similar but slightly darker (chestnut); wing-coverts concolor with back but immaculate; secondaries chestnut, the primaries also mostly chestnut but outer webs edged with light olive-brown (those of the several more outer ones wholly or mostly of the latter color) and with terminal portion deep grayish brown or dusky; lores nearly uniform dusky; an indistinct superciliary stripe (obsolete anterior to eye) of pale yellowish buff, broken by dusky olive margins or edges to the feathers; auricular region streaked with dusky olive and light yellowish buff; suborbital and malar regions light yellowish buff, the feathers margined with dusky; chin and throat buff, or yellowish buff, the latter (sometimes chin also) with feathers narrowly tipped with olive; rest of under parts light olive or buffy olive, each feather with a large central guttate spot of light buff or yellowish buff, these markings smaller (sometimes obsolete) on flanks; shorter under tail-coverts light buff mesially broadly edged with light buffy brown, the longer ones nearly uniform cinnamon to cinnamon-rufous; under wing-coverts buff (more or less deep,) the inner webs of remiges cinnamon-rufous, with terminal portion of longer primaries grayish brown or dusky, that of outermost primary mostly of the latter color; maxilla blackish or dusky brown to nearly black, with a tomial stripe of pale dull yellowish or whitish; mandible pale dull yellowish or whitish (in dried skins); legs and feet horn color or dusky (in dried skins).

*Adult male*.—Length (skins), 204–241 (227); wing, 109.5–125 (119.5); tail, 91–102 (96); culmen, 31.5–37.5 (34.3); tarsus, 23–24 (23.5); middle toe, 17.5–18.5 (18).<sup>a</sup>

*Adult female*.—Length (skin), 215; wing, 108; tail, 91.5; culmen, 30.5; tarsus, 21.5; middle toe, 17.<sup>b</sup>

Southeastern Mexico, in States of Vera Cruz (Córdova; Jalapa; Coátepec; Huatusco; Jico; Cofre de Perote), Oaxaca, Guerrero (Chilpancingo; Omilteme) and Chiapas (Tumbalá), and through Guatemala (Choctúm; Cobán; Chiséc; Rio de la Pasión; El Rincón, San Marcos; Las Nubes, Cerro Zunil) to Honduras (Yaruca).

<sup>a</sup> Three specimens, from Vera Cruz and Guerrero.

<sup>b</sup> One specimen, from Chiapas. An adult female from Yaruca, Honduras, measures as follows: Length (skin), 195; wing, 104; tail, 82.5; culmen, 30.5; tarsus, 22; middle toe, 18.

- Dendroornis triangularis* (not *Dendrocolaptes triangularis* Lafresnaye) SCLATER, Proc. Zool. Soc. Lond., 1856, 289 (Córdova, Vera Cruz).
- Dendroornis erythropygia* SCLATER, Proc. Zool. Soc. Lond., 1859, 366 (Jalapa, Vera Cruz, Mexico; coll. P. L. Sclater), 381 (Oaxaca); Cat. Am. Birds, 1862; 165 (Jalapa); Cat. Birds Brit. Mus., xv, 1890, 131, part (Jalapa; sources Río de la Pasión, Chiséc, and Choctúm, Guatemala).—SALVIN and SCLATER, Ibis, 1860, 35 (Cobán, Guatemala).—BOUCARD, Ann. Soc. Linn. Lyons, 1878, 38 (Guatemala).—ELLIOT, Auk, vii, 1890, 187, part (Jalapa, Mexico, Guatemala; excl. syn. *D. e. æquatorialis* Berlepsch and Taczanowski).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1891, 181, part (Jalapa, Coátepec, Huatusco, Córdova, Coñre de Perote, Vera Cruz; Chilpancingo, Guerrero; Oaxaca; El Rincón, Las Nubes, Cobán, Chiséc, and Choctúm, Guatemala).—BANGS, Bull. Mus. Comp. Zool., xxxix, 1903, 151 (Yaruca, Honduras).
- D[endroornis] erythropygia* SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1870, 839, part (monogr.).
- [Dendroornis] erythropygia* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 68, part.—SHARPE, Hand-list, iii, 1901, 78, part.
- [Dendroornis] triangularis erythropygia* BERLEPSCH and STOLZMANN, Proc. Zool. Soc. Lond., 1896, 376, in text.
- [Dendrocolaptes] erythropygius* GRAY, Hand-list, i, 1869, 177, no. 2405.
- Xiphorhynchus erythropygius* OBERHOLSER, Smithsonian Misc. Coll., xlviii, no. 1579, May 13, 1905, 63.

### XIPHORHYNCHUS PUNCTIGULUS PUNCTIGULUS (Ridgway).

#### SPOTTED-THROATED WOODHEWER.

Somewhat like *X. erythropygius*, but color of pileum, back, and under parts greenish or ochereous olive instead of olive-brown, back without streaks or with very narrow ones on anterior portion only, and throat spotted rather than barred with dusky.

*Adults (sexes alike).*—Pileum deep olive, the feathers more or less broadly tipped or terminally margined with dusky, and usually (some of them at least) with a narrow shaft-streak of pale buff; hindneck, back, and scapulars deep ochereous olive, the more anterior scapulars and interseapulars sometimes with a very narrow mesial streak of light buff; rump, upper tail-coverts, and tail chestnut, the shafts of rectrices darker; wing-coverts and most of outer webs of primaries olive, the secondaries chestnut, but outer webs of distal ones edged with olive; an indistinct superciliary stripe of light buff (obsolete anterior to eye) broken by dusky olive margins or edgings to the feathers; lores nearly uniform dusky; auricular region streaked with dusky olive and light buff or yellowish buff, the suborbital and malar regions dusky olive spotted or speckled with buffy; chin and throat buff, the latter with a triangular or diamond-shaped spot of deep olive on tip of each feather; rest of under parts clear, somewhat greenish, olive, each feather with a central cuneate, guttate or fusi-form spot of buff, these markings narrower (streak-like) on sides, less distinct on flanks; under tail-coverts buff mesially (broadly), edged with olive, the longer ones nearly uniform rusty; under wing-coverts



mostly ochraceous-buff, tinged or faintly mottled with pale brown, the marginal coverts light buff, spotted or blotched with pale brown or olive; inner webs of remiges dull cinnamon-rufous, paler on edges, the longer primaries with terminal portion (extensively) deep grayish brown or dusky; maxilla horn color, blackish basally, pale horn color or dull whitish along tomia; mandible pale horn color or dull whitish or yellowish (in dried skins); iris brown; legs and feet dusky (in dried skins).

*Adult male*.—Length (skins), 200–233 (213); wing, 101–120 (112.1); tail, 75–100 (90.8); culmen, 29–36 (32.7); tarsus, 20–23.5 (22.5); middle toe, 17.5–19.5 (18.4).<sup>a</sup>

*Adult female*.—Length (skins), 194–233 (216); wing, 100–116 (108.6); tail, 82.5–96 (89.5); culmen, 29–35 (32.1); tarsus, 21–23 (22.1); middle toe, 18–19 (18.3).<sup>b</sup>

Nicaragua (San Rafael del Norte), Costa Rica (Naranjo de Cartago; Tucurríqui; Río Reventazón; Bonilla; Guayabo; Tuís; Angostura; Carrillo; Río Súcio; Pacuare; La Hondura; El Hogár; Juan Viñas; San Carlos; Candelária; Barranca; Cariblanco de Sarapiquí; La Vijagua; Cerro Santa María; Laguária, and Los Reyes, Dota; Tenório; El General), and Panamá (Boquete, 4,000–4,500 feet; Boquete de Chitra; Bugaba; Castillo; Calovévora; Cordillera del Chucu; Volcán de Chiriquí; Santiago de Veragua; Lion Hill).

*Dendroornis erythropygia* (not of Sclater) CABANIS, Journ. für Orn., 1861, 242 (Costa Rica).—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1864, 355 (Panamá; crit.).—SALVIN, Proc. Zool. Soc. Lond., 1867, 144 (Santiago de Veragua, Panamá); 1870, 193 (Calovévora, Boquete de Chitra, Cordillera del Chucu, Bugaba, and Volcán de Chiriquí, Panamá).—LAWRENCE, Ann. Lyc. N. Y., ix, 1868, 107 (Angostura, Pacuare, and Barranca, Costa Rica).—FRANTZIUS, Journ. für Orn., 1869, 305 (Costa Rica).—RIDGWAY, Proc. U. S. Nat. Mus., vi, 1883, 414 (Río Súcio, Costa Rica).—SCLATER, Cat. Birds Brit. Mus., xv, 1890, 131, part (Angostura, Costa Rica; Castillo, Santiago, Calovévora, Volcán de Chiriquí, and Bugaba, Panamá).—ELLIOT, Auk, vii, 1890, 187, part (Costa Rica; Veragua; Panamá).

[*Dendroornis*] *erythropygia* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 68, part.—SHARPE, Hand-list, iii, 1901, 78, part.

<sup>a</sup> Nineteen specimens.

<sup>b</sup> Seventeen specimens.

| Locality.                                                   | Wing. | Tail. | Culmen. | Tarsus. | Middle toe. |
|-------------------------------------------------------------|-------|-------|---------|---------|-------------|
| MALES.                                                      |       |       |         |         |             |
| Nine adult males from Panamá.....                           | 110.9 | 90.2  | 32.7    | 22.6    | 18.3        |
| Ten adult males from Costa Rica.....                        | 113.1 | 91.2  | 32.7    | 22.3    | 18.5        |
| FEMALES.                                                    |       |       |         |         |             |
| Seven adult females from Panamá.....                        | 109.1 | 89.9  | 33      | 21.9    | 18.2        |
| Nine adult females from Costa Rica.....                     | 107.9 | 89    | 31.2    | 22.2    | 18.3        |
| One adult female from Nicaragua (San Rafael del Norte)..... | 112   | 90.5  | 33      | 22.5    | 18.5        |

- D[endrornis] erythropygia* SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1870, 839, part.
- Dendrornis punctigula* RIDGWAY, Proc. U. S. Nat. Mus., xi, sig. 34, Sept. 20, 1889, 544 (Naranjo, Costa Rica; coll. U. S. Nat. Mus.).—SCLATER, Ibis, 1889, 352 (crit.).—ELLIOT, Auk, vii, 1890, 188 (monogr.).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1891, 182 (Angostura, Pacuare, Barranca, Río Súcar, Naranjo, and Tucurrí, Costa Rica; Chiriquí, Bugaba, Castillo, Cordillera del Chucu, Boquete de Chitra, Calovévora, and Santiago, Panamá).—CHERRIE, Anal. Inst. Fis.-Geog. Costa Rica, vi, 1893, 17 (Pozo del Pital, Costa Rica).—BANGS, Proc. New Engl. Zool. Club, iii, 1902, 48 (Boquete, Panamá, 4,000–5,000 ft.).
- [*Dendrornis*] *punctigula* SHARPE, Hand-list, iii, 1901, 79, part (Costa Rica; Panamá).
- Xiphorhynchus punctigulus* OBERHOLSER, Smithsonian Misc. Coll., xlviii, no. 1579, May 13, 1905, 63.
- Xiphorhynchus punctigula* CARRIKER, Ann. Carnegie Mus., vi, 1910, 653 (Costa Rica; habits).

### XIPHORHYNCHUS PUNCTIGULUS INSOLITUS Ridgway.

TRUANDO WOODHEWER.

Similar to *X. p. punctigulus*, but color of pileum and back much darker, the latter browner (nearly chestnut-brown), and general color of under parts much browner (brownish olive instead of greenish olive).

*Adult male*.—Wing, 111; tail, 94; exposed culmen, 29; tarsus, 22; middle toe, 18.

*Adult female*.—Length (skin), 190; wing, 101; tail, 86; exposed culmen, 30; tarsus, 22; middle toe, 18.5.

Eastern Panamá (Cascajal, Coclé) and adjacent portion of north-western Colombia (Truando).

*Dendrornis triangularis* (not *Dendrocolaptes triangularis* Lafresnaye) CASSIN, Proc. Acad. Nat. Sci. Phila., 1860, 193 (Río Truando, n. w. Colombia).

*Xiphorhynchus punctigula insolitus* RIDGWAY, Proc. Biol. Soc. Wash., xxii, April 17, 1909, 73 (Cascajal, Coclé, e. Panamá; coll. U. S. Nat. Mus.).

### Genus PICOLAPTES Lesson.

*Picolaptes* LESSON, Traité d'Orn., 1831, 313. (Type, *Dendrocolaptes tenuirostris* Lichtenstein.)

*Lepidocolaptes* REICHENBACH, Handb. Spec. Orn., 1853, 183. (Type, *Dendrocolaptes squamatus* Lichtenstein.)

*Dacryophorus* BONAPARTE, Ann. Sci. Nat., sér. 4, Zool., i, 1854, 133. (Type, *Dendrocolaptes lacrymiger* Des Murs.)

*Thripobrotus*<sup>a</sup> CABANIS, in Wiegmann's Archiv für Naturg., xiii, pt. i, 1847, 339. (Type, *Dendrocolaptes bivittatus* Lichtenstein.)

Medium-sized Dendrocolaptidæ (length about 160–190 mm.) with roundish, nonoperculate nostrils, and rather long, decidedly (but not conspicuously) decurved, compressed bill.

<sup>a</sup> “*θρίψ*, Holzwurm; *βρωσκω*, Verzehren.” (Cabanis.)

Bill as long as or longer than head (but much less than twice as long as tarsus), decidedly though not conspicuously decurved throughout, rather slender, much compressed, its width at latero-frontal antiæ slightly to decidedly less than depth at same point and contained from four and a half to seven times in distance from nostril to tip of maxilla; culmen and tomia gradually decurved from base, the latter without trace of subterminal notch; gonys very faintly to rather strongly concave, sometimes slightly prominent basally. Nostril exposed, posteriorly in contact with latero-frontal feathering, longitudinally oval, nonoperculate, but margined above by a narrow membrane. Rictal bristles absent, and feathers of chin, etc., without terminal setæ. Wing moderate or rather large, rather pointed, the longest primaries exceeding secondaries by nearly to much more than length of tarsus; eighth, seventh and eighth, sixth, seventh, and eighth, or seventh, eighth, and ninth primaries longest, the tenth (outermost) nearly to a little more than three-fourths as long as the longest, the ninth longer than fifth, sometimes equal to the longest. Tail three-fourths to (usually) decidedly more than three-fourths as long as wing, graduated for about one-fourth its length, the rectrices (12) acuminate, their strong and very rigid shafts decurved, sometimes twisted, terminally. Tarsus much shorter to slightly longer (*P. tenuirostris*) than length of bill from nostril, one-fourth (*P. tenuirostris*) to much less than one-fourth as long as wing, distinctly scutellate (endaspidean); middle toe, with claw, equal to tarsus or decidedly longer; outer toe, without claw, equal to or slightly longer than middle toe; inner toe, without claw, reaching to subterminal articulation of middle toe; hallux decidedly shorter than inner toe, scarcely if at all stouter; middle toe united to outer toe for whole of first and part of second phalanx, to inner toe by greater part of first phalanx; anterior claws large, very strongly curved, acute, that of the hallux much less curved, equal to or shorter than the digit.

*Coloration*.—Rump, upper tail-coverts, tail, and at least part of remiges cinnamon-rufous or rufous-chestnut; back, scapulars, and wing-coverts olive-brown, russet, or cinnamon-rufous; pileum and hindneck brown or dusky, streaked or spotted with paler (sometimes the back also streaked), or feathers margined with dusky; chin and throat white or buffy (feathers of throat sometimes narrowly margined with dusky), the rest of under parts more or less distinctly streaked or striped.

*Nidification*.—Nest in holes of trees or stumps; eggs plain white.

*Range*.—Southern Mexico to Cayenne, Paraguay, Uruguay, Bolivia, and Peru. (About twenty species.)<sup>a</sup>

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<sup>a</sup> Of these the following have not been examined in this connection: *P. falcinellus* (Cabanis and Heine), *P. oblectus* Allen, *P. warszewiczi* (Cabanis and Heine), *P. parvirostris* Selater, *P. puncticeps* Selater and Salvin, *P. albolineatus* (Lafresnaye), *P. saturator* Underwood, and *P. fuscicapillus* Pelzeln.



## KEY TO THE SPECIES AND SUBSPECIES OF PICOLAPTES.

- a. Breast essentially bicolored, the very pale buff or buffy white median area on each feather very broad, the edges of the feathers mostly or wholly black; buffy or whitish streaks on pileum and hindneck broader; back more grayish brown. (Western and central Mexico.).....**Picolaptes leucogaster** (p. 259).
- aa. Breast distinctly tricolored, the feathers broadly edged with brown, this much broader than the black line edging the narrower buffy mesial area; buffy streaks on pileum narrower; back more cinnamonaceous brown.
- b. Markings on pileum guttate or rhomboid (spot-like). (*Picolaptes affinis*.)
- c. Under parts with stripes narrower, less distinct posteriorly; throat paler buff (not deeper than color of stripes on breast, etc.). (Southern Mexico to Guatemala.).....**Picolaptes affinis affinis** (p. 261).
- cc. Under parts with stripes broader, more distinct posteriorly; throat deeper buff than color of stripes on breast, etc. (Costa Rica and western Panamá.)  
**Picolaptes affinis neglectus** (p. 263).
- bb. Markings on pileum linear (streak-like). (*Picolaptes lineaticeps*.)
- c. Pale buffy streaks on back and under parts narrower, the former more acicular; throat paler and less extensively buffy.
- d. Coloration paler, the ground color of pileum lighter sepia brown, back, etc., light cinnamon-brown; streaks on upper back smaller, without distinct blackish edges. (Eastern Panamá.)  
**Picolaptes lineaticeps lineaticeps** (p. 264).
- dd. Coloration darker, the ground color of pileum dark sooty brown, back russet-brown; streaks on upper back larger, distinctly edged with blackish. (Western Panamá to Nicaragua.)  
**Picolaptes lineaticeps compressus** (p. 265).
- cc. Pale buffy streaks on back and under parts broader, the former more cuneate; throat more deeply and extensively buff. (Northern Honduras to southern Mexico.).....**Picolaptes lineaticeps insignis** (p. 266).

**PICOLAPTES LEUCOGASTER** (Swainson).**WHITE-STRIPED WOODHEWER.**

*Adults (sexes alike).*—Pileum and hindneck deep olive-brown or sepia, each feather with a broad guttate or elliptical streak of buff or buffy white, margined with blackish; back, scapulars, and wing-coverts buffy olive-brown (nearly broccoli brown), the upper back usually with a few streaks of buff (with or without blackish margins); rump, upper tail-coverts, tail, and remiges deep cinnamon-rufous or rufous-chestnut, the remiges, however, passing basally into brownish (like color of wing-coverts, etc.), and terminal portion of inner webs of primaries dusky; orbital ring and supra-auricular stripe white or buffy white, the feathers of the latter narrowly margined with black; a narrow postocular stripe of blackish or dusky, narrowly streaked with white or pale buff; the greater portion of auricular region buffy white or very pale buff, narrowly streaked with dusky; suborbital and malar regions, chin, and throat buffy white, the lower throat margined on each side by one or more streaks of black or dusky; the feathers of extreme lower throat (sometimes those of suborbital region and posterior portion of

malar region also), narrowly margined with the same; foreneck and chest buffy white or very pale buff, the feathers broadly margined with black or dusky, producing a squamate effect; rest of under parts similar but with mesial buffy or whitish area on each feather narrower, the blackish lines submarginal instead of marginal, the feathers broadly edged with light grayish olive or grayish brown, this gradually increasing (at expense of the whitish or buffy mesial stripes and blackish lines) posteriorly, where, on flanks, lower abdomen, and under tail-coverts the light grayish brown predominates; under wing-coverts ochraceous-buff, paler on margin of wing; inner webs of remiges light cinnamon-rufous, the longer primaries grayish brown terminally; maxilla deep horn brown, darker basally; mandible paler, especially toward base; legs and feet horn color or dusky (in dried skins).

*Young*.—Similar to adults but blackish margins and edgings to feathers of lower parts more irregular or broken, and color of back more olivaceous (less tawny) brown.

*Adult male*.—Length (skins), 219–235 (226); wing, 108.5–123 (116.9); tail, 93–103.5 (97.4); culmen, 32–37.5 (35.4); tarsus, 20–21.5 (20.8); middle toe, 15.5–17 (16.5).<sup>a</sup>

*Adult female*.—Length (skins), 219–225 (222); wing, 108.5–115.5 (112); tail, 90–98 (94.9); culmen, 29.5–37 (34.4); tarsus, 20–21 (20.6); middle toe, 16–16.5 (16.2).<sup>b</sup>

Western and central Mexico, in States of Sonora (Nuri), Durango (Coyotes; El Salto; Ciudad Durango), Guanajuato, San Luis Potosí (Sierra de San Luis Potosí), Vera Cruz (alpine zone of Orizaba), Puebla (Tenango del Valle; Rio Frio; Ixtaccihuatl; San Salvador el Verde), Zacatecas (Plateado), Mexico (near City of Mexico; Temascaltepec), Morelos (Huitzilac), Michoacán (Mt. Tancitaro; Patzcuaro; Quiroga, Lake Patzcuaro; Morelia; Nahuatzin), Jalisco (Sierra de Bolaños; Sierra de Nayarit; Zapotlán; Hacienda de San Marcos; San Sebastián; Tonila), Colima (Sierra Nevada), Guerrero (Amula; Omilteme), and Oaxaca (La Parada; Cerro San Felipe), and Territory of Tepic (Santa Teresa).

*Xiphorhynchus leucogaster* SWAINSON, Philos. Mag., new ser., i, 1827, 440 (Temascaltepec, Mexico; coll. Bullock Mus.).

*X[iphorhynchus] leucogaster* BONAPARTE, Conspect. Av., i, 1850, 208.

*Picolaptes leucogaster* LAFRESNAYE, Rev. et Mag. Zool., March, 1850, 150.—SCLATER, Proc. Zool. Soc. Lond., 1858, 297 (La Parada, Oaxaca); Cat. Am. Birds, 1862, 166; Cat. Birds Brit. Mus., xv, 1890, 147 (near City of Mexico; La Parada, Oaxaca; Ciudad Durango).—SUMICHRIST, La Naturaleza, v, 1881,

<sup>a</sup> Ten specimens.

<sup>b</sup> Six specimens.

248 (alp. reg. Orizaba, Vera Cruz).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1891, 185 (Nuri, Sonora; Ciudad, Durango; Sierra de San Luis Potosí; Sierra de Bolaños and Sierra de Nayarit, Jalisco; Sierra Nevada de Colima; Tenango del Valle, Río Frio, Ixtaccihuatl, and San Salvador el Verde, Puebla; Temiscaltepec; La Parada, Oaxaca; Omilteme and Amula, Guerrero).

[*Picolaptes*] *leucogaster* GRAY, Hand-list, i, 1869, 179, no. 2441.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 68.—SHARPE, Hand-list, iii, 1901, 83.

T[*hripobrotus*] *leucogaster* CABANIS and HEINE, Mus. Hein., ii, 1859, 37, footnote.

[*Thripobrotus*] *leucogaster* HEINE and REICHENOW, Nom. Mus. Hein. Orn., 1890, 137.

*Picolaptes atripes* EYTON, Jardine's Contr. Orn., 1851, 76 ("South America").

[*Picolaptes*] *atripes* GRAY, Hand-list, i, 1869, 179, no. 2446.

### PICOLAPTES AFFINIS AFFINIS (Lafresnaye).

#### ALLIED WOODHEWER.

*Adults (sexes alike).*—Pileum and hindneck brown (light sepia or dark raw-umber), each feather margined terminally with black or dusky and with a central guttate or diamond-shaped spot of dull buffy; back, scapulars, and wing-coverts plain raw-umber brown, the upper back sometimes with a few narrow streaks of pale buffy; rump and upper tail-coverts plain cinnamon-rufous; tail and remiges chestnut or rufous-chestnut, the primaries and distal secondaries edged, more or less distinctly, with brown, the exposed (terminal) portion of inner webs of longer primaries dusky grayish brown; sides of head and neck buff, streaked (the feathers edged or margined) with dusky; chin and throat immaculate buff, the extreme lower throat and upper chest also buff, but the feathers margined with black; rest of under parts light raw-umber brown, each feather with a broad central elliptical or obtusely cuneate streak of buff, margined with black, these markings becoming gradually less distinct posteriorly, the black marginal lines nearly obsolete on flanks and under tail-coverts, the general color of the latter more fulvescent or cinnamonaceous; under wing-coverts ochraceous-buff (passing into buff on margin of wing) slightly flecked with dusky; inner webs of remiges light cinnamon-rufous, with terminal portion (extensively) dusky brownish gray; bill pale grayish or yellowish horn color, usually somewhat darker or more brownish basally; iris brown; legs and feet dusky horn color (in dried skins).



*Adult male*.—Length (skins), 207–222 (212); wing, 100.5–116 (107.5); tail, 87–100 (93.9); culmen, 28–31.5 (29.6); tarsus, 19–22 (20.8); middle toe, 15–17 (15.6).<sup>a</sup>

*Adult female*.—Length (skins), 193–219 (209); wing, 103–112 (106); tail, 82–97.5 (90); culmen, 29–32.5 (30.7); tarsus, 20–21.5 (20.7); middle toe, 15–17 (16.3).<sup>b</sup>

Southern Mexico, in States of Vera Cruz (Córdova; Potrero, near Córdova; Omealca; Cofre de Perote; Jalapa; Pasa Nueva), Puebla (Hueytamalco; Teziutlán), Mexico (Valley of Mexico), Guerrero (Omiteme; mts. near Chilpancingo), Oaxaca (Mt. Zempoáltepec; Totóntepec; Villa Alta; 15 m. west of Oaxaca), and Chiapas (Tumbalá; San Cristóbal; Pinabete), and Guatemala (Santa Bárbara; Calderas, Volcán de Fuego; Volcán de Agua; Santa Maria and Chuipaché, Quezaltenango; Tolimán; Tecpám; Santa Bárbara de Vera Paz; Todos Santos; Sierra Santa Elena).

*Dendrocolaptes affinis* LAFRESNAYE, Rev. Zool., 1839, 100 (Mexico).

*P[icolaptes] affinis* GRAY, Gen. Birds, i, 1847, 140.

*Picolaptes affinis* LAFRESNAYE, Rev. Zool., ser. 2, ii, May, 1850, 275 (monogr.).—SCLATER, Proc. Zool. Soc. Lond., 1856, 289 (Córdova, Vera Cruz); 1859, 365 (Jalapa, Vera Cruz), 381 (Totóntepec, Oaxaca); 1864, 175 (City of Mexico); Cat. Am. Birds, 1862, 166 (Jalapa); Cat. Birds Brit. Mus., xv, 1890, 149, part (Jalapa, Vera Cruz; Sta. Bárbara, Volcán de Fuego, and Volcán de Agua, Guatemala).—SCLATER and SALVIN, Ibis, 1859, 117 (Pacific side Guatemala).—SALVIN and SCLATER, Ibis, 1860, 35 (Calderas, Volcán de Fuego, Guatemala; crit.).—SUMICHRIST, Mem. Bost. Soc. N. H., i, 1869, 555, part (hot, temperate, and alpine regions, Vera Cruz); La Naturaleza, v, 1881, 248 (Omealca, Vera Cruz).—(?) SANCHEZ, An. Mus. Nac. Mexico, i, 1877, 97, part (Vera Cruz).—FERRARI-PEREZ, Proc. U. S. Nat. Mus., ix, 1886, 156 (Hueytamalco, Teziutlán, Puebla; Jalapa, Vera Cruz).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1891,

<sup>a</sup> Fifteen specimens.

<sup>b</sup> Eighteen specimens.

| Locality.                                                               | Wing. | Tail. | Culmen. | Tarsus. | Middle toe. |
|-------------------------------------------------------------------------|-------|-------|---------|---------|-------------|
| MALES.                                                                  |       |       |         |         |             |
| Three adult males from Vera Cruz.....                                   | 105.2 | 94    | 29.8    | 21.7    | 16.7        |
| Two adult males from Oaxaca.....                                        | 103.7 | 98.2  | 28.7    | 20.7    | 15          |
| Four adult males from Guerrero.....                                     | 112.2 | 91.1  | 30.4    | 20.7    | 15.9        |
| Two adult males from Chiapas.....                                       | 107.5 | 93.5  | 29      | 20      | 15.2        |
| Two adult males from Guatemala.....                                     | 105.5 | 95.2  | 28.7    | 20.5    | 16.2        |
| Ten adult males ( <i>P. a. neglectus</i> ) from Costa Rica.....         | 107.7 | 91.3  | 30.3    | 20.7    | 16.7        |
| Ten adult males ( <i>P. a. neglectus</i> ) from western Panamá.....     | 109.1 | 94.2  | 31.2    | 20.8    | 16.5        |
| FEMALES.                                                                |       |       |         |         |             |
| Four adult females from Vera Cruz.....                                  | 104.6 | 92.4  | 29.7    | 20.9    | 15.7        |
| Two adult females from Oaxaca.....                                      | 106.5 | 95.2  | 31      | 20.5    | 16          |
| Nine adult females from Guerrero.....                                   | 106.7 | 87.7  | 31.4    | 20.6    | 16.2        |
| Two adult females from Chiapas.....                                     | 104.2 | 90    | 29.2    | 20.5    | 15.7        |
| One adult female from Guatemala.....                                    | 107   | 95.5  | 30      | 21.5    | 16          |
| Two adult females ( <i>P. a. neglectus</i> ) from Costa Rica.....       | 104.8 | 90.2  | 31      | 20.5    | 16.6        |
| Three adult females ( <i>P. a. neglectus</i> ) from western Panamá..... | 108   | 92.5  | 31      | 20.8    | 16.2        |

185, part (Valley of Mexico; alpine reg., Omealca, Cofre de Perote, Jalapa, and Córdoba, Vera Cruz; Hueytamalco, Puebla; Villa Alta, and Totóntepec, Oaxaca; Omilteme, Guerrero; Santa Maria, Chuipaché in Quezaltenango, Totimán, Volcán de Fuego, Volcán de Agua, and Santa Bárbara, Vera Paz, Guatemala).—CHAPMAN, Bull. Am. Mus. N. H., x, 1898, 32 (Jalapa).—DEARBORN, Pub. 125, Field Mus. N. H., 1907, 108 (Tecpán, Guatemala, 9,500 ft.). *Lepidocolaptes affinis* REICHENBACH, Handb. der Spec. Orn., i, 1850, 184, pl. 603; fig. 4058.

*Dacryophorus affinis* BONAPARTE, Cons. Voluc. Anisod., 1854, 11.

[*Thripobrotus*] *affinis* CABANIS and HEINE, Mus. Hein., ii, 1859, 38 (Jalapa).

[*Thripobrotus*] *affinis* HEINE and REICHENOW, Nom. Mus. Hein. Orn., 1890, 136 (Jalapa).

[*Picolaptes*] *affinis* BONAPARTE, Cons. Av., i, 1850, 208.—GRAY, Hand-list, i, 1869, 179, no. 2449 (Jalapa).—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 68, part.—SHARPE, Hand-list, iii, 1901, 83, part.

### PICOLAPTES AFFINIS NEGLECTUS Ridgway.

#### SOUTHERN ALLIED WOODHEWER.

Similar to *P. a. affinis*, but stripes on under parts broader, more distinct on posterior portions; chin and throat more deeply buff, always more so than the stripes on under parts of body.

*Adult male*.—Length (skins), 196–223 (208); wing, 102.5–116.5 (109.1); tail, 87–97.5 (92.7); culmen, 27–33 (30.8); tarsus, 20–21.5 (20.8); middle toe, 16–17.5 (16.8).<sup>a</sup>

*Adult female*.—Length (skins), 197–215 (203); wing, 101.5–110 (105.6); tail, 85–94 (90.7); culmen, 29–32.5 (31); tarsus, 20–21.5 (20.6); middle toe, 16–17 (16.5).<sup>b</sup>

Costa Rica (Volcán de Irazú; Volcán de Turrialba; Cartago, Azahár, and La Estrella, Cartago; Escazú; Tobosi; Juan Viñas; Coliblanco; Guayabo; Barranca; Dota Mts., Santa Maria, Copéy, Las Vueltas, Los Reyes, and Laguária, Dota; El General; Ojuras de Térraba) and western Panamá (Boquete; Chiriquí).

*Thripobrotus affinis* (not *Dendrocolaptes affinis* Lafresnaye) CABANIS, Journ. für Orn., 1861, 242 (Costa Rica).

*Picolaptes affinis* LAWRENCE, Ann. Lyc. N. Y., ix, 1868, 107 (San José, Dota, and Barranca, Costa Rica).—FRANTZIUS, Journ. für Orn., 1869, 305 (Costa Rica).—SALVIN, Proc. Zool. Soc. Lond., 1870, 193 (Volcán de Chiriquí, Panamá).—RIDGWAY, Proc. U. S. Nat. Mus., v. 1882, 497 (Volcán de Irazú, Costa Rica).—

<sup>a</sup> Twenty specimens.

<sup>b</sup> Thirteen specimens.

| Locality.                                    | Wing. | Tail. | Culmen. | Tarsus. | Middle toe. |
|----------------------------------------------|-------|-------|---------|---------|-------------|
| MALES.                                       |       |       |         |         |             |
| Ten adult males from Costa Rica.....         | 107.7 | 91.3  | 30.3    | 20.7    | 16.7        |
| Ten adult males from western Panamá.....     | 109.1 | 94.2  | 31.2    | 20.8    | 16.5        |
| FEMALES.                                     |       |       |         |         |             |
| Ten adult females from Costa Rica.....       | 104.8 | 90.2  | 31      | 20.5    | 16.6        |
| Three adult females from western Panamá..... | 108   | 92.5  | 31      | 20.8    | 16.2        |

- SCLATER, Cat. Birds Brit. Mus., xv, 1890, 149, part (San José and San Francisco, Costa Rica; Volcán de Chiriquí, Panamá).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1891, 185, part (Dota, Barranca, San José, and San Francisco, Costa Rica; Volcán de Chiriquí, Panamá).—CHERRIE, Anal. Inst. Fis.-Geog. Costa Rica, vi, 1893, 17 (San Marcos and Río Naranjo, Costa Rica).—BANGS, Proc. New Engl. Zool. Club, iii, 1902, 48 (Boquete, 4,000–6,000 ft., Panamá).—FERRY, Pub. 146, Field, Mus. N. H., orn. ser., i, no. 6, 1910, 271 (Guayabo, Coliblanco, and Volcán de Turrialba, Costa Rica).
- [*Picolaptes*] *affinis* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 68, part.—SHARPE, Hand-list, iii, 1901, 83, part.
- Picolaptes affinis neglectus* RIDGWAY, Proc. Biol. Soc. Wash., xxii, April 17, 1909, 73 (Coliblanco, e. Costa Rica; coll. U. S. Nat. Mus.).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 655 (highlands of Caribbean slope, Costa Rica, above 2,500 ft.; crit.).

**PICOLAPTES LINEATICEPS LINEATICEPS Lafresnaye.**

**STREAKED-HEADED WOODHEWER.**

*Adult (sexes alike).*—Pileum brown (sepia or light sepia), passing into lighter and warmer brown (nearly prouts brown) on hindneck, each feather with a rather broad mesial streak of pale brownish buff; back, scapulars, and wing-coverts light cinnamon-brown (between cinnamon and raw-umber), the upper back usually (?) with a few narrow, pointed streaks of pale brownish buff or dull buffy whitish; rump, upper tail-coverts, tail, and remiges plain cinnamon-rufous or rufous-chestnut, the outer webs of primaries and distal secondaries indistinctly edged with grayish brown, the terminal portion of inner web of longer primaries deep grayish brown or dusky; sides of head and neck streaked with sepia brown and pale brownish buff; chin and throat pale dull buff, the feathers of extreme lower throat narrowly margined with dusky; rest of under parts pale buffy grayish brown (pale broccoli brown or isabella color), each feather with a broad mesial stripe of pale buff, margined laterally by a narrow streak of dusky—these markings becoming gradually narrower and less distinct (the dusky edgings obsolete) posteriorly; under wing-coverts ochraceous-buff, those near edge of wing pale buff with a few flecks of dusky; inner webs of remiges vinaceous-cinnamon, the outer primaries with terminal portion (extensively) grayish brown or dusky; bill pale brown or dull brownish buffy, the basal portion of maxilla slightly darker; iris brown; legs and feet dusky horn color or dusky olive (in dried skins).

*Adult male.*—Length (skins), 172–190 (181); wing, 90–98 (94); tail, 72–73 (72.5); culmen, 30; tarsus, 18–20 (19); middle toe, 16.<sup>a</sup>

Eastern Panamá (Lion Hill; Panamá; Punta de Sabana).

*Picolaptes lineaticeps* LAFRESNAYE, Rev. Zool., ser. 2, ii, May, 1850, 277 (locality unknown; type now in coll. Boston Soc. Nat. Hist.).—BANGS, Proc. New Engl. Zool. Club, ii, 1900, 25 (Loma del León, Panamá).

<sup>a</sup> Two specimens.



*Dendroornis tenuirostris* (not *Dendrocolaptes tenuirostris* Lafresnaye) LAWRENCE, Ann. Lyc. N. Y., vii, 1862, 292 (Panamá).

*Picolaptes compressus* (not *Thripobrotus compressus* Cabanis) SALVADORI and FESTA, Boll. Mus. Zool., etc., Torino, xiv, 1899, no. 339, 7 (Punta de Sabana, Panamá).

**PICOLAPTES LINEATICEPS COMPRESSUS (Cabanis).**

**THIN-BILLED WOODHEWER.**

Similar to *P. l. lineaticeps* but coloration decidedly darker, the ground color of pileum dark sooty brown, the back, etc., deeper, russet brown, with streaks on upper back larger, distinctly edged with blackish; ground color of under parts darker, more strongly contrasted with the broader and conspicuously blackish-edged buffy stripes, and feathers of lower throat (sometimes of nearly whole throat) narrowly margined with dusky.

*Adult male*.—Length (skins), 177–197 (190); wing, 89–101 (95.3); tail, 71.5–85 (80); culmen, 27–33.5 (29.1); tarsus, 18–20 (18.8); middle toe, 14–16 (15).<sup>a</sup>

*Adult female*.—Length (skins), 173–194 (185); wing, 84.5–95.5 (90.7); tail, 71.5–81.5 (77); culmen, 26–29.5 (28); tarsus, 17–19 (18); middle toe, 13.5–15 (14.5).<sup>b</sup>

Western Panamá (Bugaba; Mina de Chorchá; David; Divala; Boquete), Costa Rica (Puerto Limón; Navarro de Cartago; Juan Viñas; Turrialba; El Hogár; Guayabál; Guápiles; Guayabo; Orosí; Coralillo; Jiménez; Bonilla; Monte Redondo; Cobia de Salinas; Bolsón; Tenório; El General; Boca Barranca, Punta Arenas; Barranca, Boruca, and Paso Real, Boruca; Pozo Azul de Pirrís; Pozo del Río

<sup>a</sup> Fifteen specimens.

<sup>b</sup> Twelve specimens.

| Locality.                                                             | Wing. | Tail. | Culmen. | Tarsus. | Middle toe. |
|-----------------------------------------------------------------------|-------|-------|---------|---------|-------------|
| <b>MALES.</b>                                                         |       |       |         |         |             |
| Two adult males ( <i>P. l. lineaticeps</i> ) from eastern Panamá..... | 94    | 72    | 30      | 19      | 16          |
| Five adult males from western Panamá.....                             | 92.1  | 78.1  | 28.6    | 18.5    | 15.1        |
| Ten adult males from Costa Rica.....                                  | 96.5  | 80.8  | 29.4    | 19      | 15          |
| Five adult males ( <i>P. l. insignis</i> ) from Honduras.....         | 95.6  | 80.3  | 28      | 18.9    | 14.8        |
| Two adult males ( <i>P. l. insignis</i> ) from British Honduras.....  | 100.5 | 89.5  | 30      | 19      | 15.5        |
| One adult male ( <i>P. l. insignis</i> ) from Chiapas.....            | 94    | 77.5  | 28      | 19      | 14          |
| One adult male ( <i>P. l. insignis</i> ) from Guatemala.....          | 101   | 81    | 28      | 19      | 14.5        |
| <b>FEMALES.</b>                                                       |       |       |         |         |             |
| Two adult females from western Panamá.....                            | 90    | 76.5  | 27      | 17.5    | 15          |
| Ten adult females from Costa Rica.....                                | 90.9  | 77.1  | 28.2    | 18.1    | 14.3        |
| Four adult females ( <i>P. l. insignis</i> ) from Honduras.....       | 93.5  | 81    | 29.9    | 19      | 14.6        |
| One adult female ( <i>P. l. insignis</i> ) from British Honduras..... | 92    | 84    | 29      | 19      | 15.5        |
| Three adult females ( <i>P. l. insignis</i> ) from Guatemala.....     | 95    | 77.2  | 28      | 18.2    | 14.2        |
| Three adult females ( <i>P. l. insignis</i> ) from Vera Cruz.....     | 94.6  | 82.5  | 28.7    | 19.5    | 15.2        |

Grande; El Pozo de Térraba; Buenos Aires; Pigres; La Palma de Nicoya; Bebedero; Volcán de Miravalles), and Nicaragua (San Carlos; Chinandega; San Gerónimo).

*Picolaptes lineaticeps* (not of Lafresnaye) LAWRENCE, Ann. Lyc. N. Y., ix, 1868, 107 (Gulf of Nicoya, Costa Rica).—SALVADORI, Atti Soc. Ital. Torino, iv, 1868, 179 (Costa Rica).—FRANTZIUS, Journ. für Orn., 1869, 305 (Costa Rica).  
*Thripobrotus compressus* CABANIS, Journ. für Orn., July, 1861, 243 (Costa Rica; coll. Berlin Mus.).

*Picolaptes compressus* LAWRENCE, Ann. Lyc. N. Y., ix, 1868, 107 (Costa Rica).—FRANTZIUS, Journ. für Orn., 1869, 305 (Costa Rica).—SALVIN, Ibis, 1869, 314, in text (crit.); Proc. Zool. Soc. Lond., 1870, 193 (Bugaba and Mina de Chorchá, Panamá; crit.).—BOUCARD, Proc. Zool. Soc. Lond., 1878, 60 (Navarro, Costa Rica).—NUTTING, Proc. U. S. Nat. Mus., v, 1882, 397 (La Palma de Nicoya, Costa Rica; habits).—SCLATER, Cat. Birds Brit. Mus., xv, 1890, 153, part (Bebedero de Nicoya, Costa Rica; Bugaba and Mina de Chorchá, Panamá).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1891, 186, part (Chinandega, Nicaragua; Navarro, La Palma de Nicoya, and Bebedero, Costa Rica; Bugaba and Mina de Chorchá, Panamá).—CHERRIE, Proc. U. S. Nat. Mus., xiv, 1891, 533 (Costa Rica; crit.); Expl. Zool. Merid. Costa Rica, 1893, 40 (Boruca and Buenos Aires, Costa Rica).—RICHMOND, Proc. U. S. Nat. Mus., xvi, 1893, 498 (San Carlos, Nicaragua).—UNDERWOOD, Ibis, 1896, 440 (Volcán Miravalles, Costa Rica).—BANGS, Proc. New Engl. Zool. Club, iii, 1902, 48 (Boquete, Panamá, 4,500 ft.).—FERRY, Pub. 146, Field Mus. N. H., orn. ser. i, no. 6, 1910, 271 (Guayabo and Puerto Limón, Costa Rica).

[*Picolaptes*] *compressus* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 68, part.—SHARPE, Hand-list, iii, 1901, 84, part.

*Picolaptes compressus compressus* BANGS, Auk, xxiv, July, 1909, 299 (Boruca, Paso Real, Pozo del Río Grande, Barranca, and Barranca de Puntarenas, w. Costa Rica).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 656 (lowlands of Costa Rica; crit.).

*Picolaptes gracilis* RIDGWAY, Proc. U. S. Nat. Mus., xi, sig. 34, Sept. 20, 1889, 542 (Monte Redondo, Costa Rica; coll. U. S. Nat. Mus.; = young female); xiv, 1891, 475 (Cobia de Salinas, Costa Rica; crit.).—ZELEDÓN, Anal. Mus. Nac. Costa Rica, i, 1888, 114.—SCLATER, Ibis, 1889, 353 (crit.).

[*Picolaptes*] *gracilis* SHARPE, Hand-list, iii, 1901, 84.

#### PICOLAPTES LINEATICEPS INSIGNIS (Nelson).

##### NORTHERN STREAKED-HEADED WOODHEWER.

Similar to *P. l. compressus*, but buffy streaks on back broader, more cuneate, those of under parts also broader, and throat more extensively buffy as well as (usually at least) deeper buff.

*Adult male*.—Length (skins), 187–223 (199); wing, 92–104 (97.9); tail, 72.5–88 (82.8); culmen, 27–33.5 (28.8); tarsus, 18.5–20 (19.1); middle toe, 14–16.5 (14.8).<sup>a</sup>

*Adult female*.—Length (skins), 187–209 (194); wing, 91.5–99 (93.1); tail, 74–86 (80.6); culmen, 27–31.5 (28.9); tarsus, 18–20 (18.9); middle toe, 13–15.5 (14.8).<sup>b</sup>

<sup>a</sup> Thirteen specimens.

<sup>b</sup> Twelve specimens.

Honduras (Puerto Cabello; Yaruca; Céiba; Santa Ana; Rio Segóvia), British Honduras (Belize; Cayo; Toledo District; Sabune District; Yacacos Lagoon; pine ridge near Manatee Lagoon), Salvador (Volcán San Miguél), and through Guatemala (pine ridge of Poctún; Chiséc; Choctúm; sources of Rio de la Pasión; Retalhuleu; Volcán de Agua; Volcán de Fuego; El Baul, near Santa Lucia Cosamalguapa; San José; Gualán?; Naranjo; Patulúl, Sololá; Mazatenango) to southern Mexico, in States of Chiapas (Palenque), Tabasco (Teapa), Oaxaca (mountains near Santo Domingo), Guerrero (Rincón) and Vera Cruz (Playa Vicente; Alvarado; San Lorenzo, near Córdova; Orizaba; Otatitlán; Motzorongo; Pasa Nueva).

*Picolaptes lineaticeps* (not of Lafresnaye) SCLATER, Proc. Zool. Soc. Lond., 1860, 252 (Orizaba, Vera Cruz); Cat. Am. Birds, 1862, 166 (Orizaba).—SALVIN, Ibis, 1861, 353 (Pacific slope Guatemala).

*Picolaptes affinis* (not *Dendrocolaptes affinis* Lafresnaye) SCLATER and SALVIN, Ibis, 1859, 117 (Guatemala).—(?) SUMICHRAST, Mem. Bost. Soc. N. H., i, 1869, 555, part (hot, temperate, and alpine regions, Vera Cruz).

*Picolaptes compressus* (not *Thripobrotus compressus* Cabanis) SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1870, 837 (Puerto Cabello, Honduras).—SCLATER, Cat. Birds Brit. Mus., xv, 1890, 153, part ("Mexico;" Belize, Brit. Honduras; pine ridge of Poctún, Chiséc, sources of Rio de la Pasión, Retalhuleu, Volcán de Agua, Volcán de Fuego, and Baul, Guatemala; Puerto Cabello, Honduras).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1891, 186, part (Orizaba, San Lorenzo near Córdova, Alvarado, and Playa Vicente, Vera Cruz; Rincón, Guerrero; Teapa, Tabasco; Belize and Cayo, Brit. Honduras; pine ridge of Poctún, Chiséc, Volcán de Agua, Volcán de Fuego, El Baul, near Santa Lucia Cosamalguapa, and Retalhuleu, Guatemala; Volcán San Miguél, Salvador; Puerto Cabello, Honduras).—LANTZ, Trans. Kansas Acad. Sci. for 1896-97 (1899), 221 (Naranjo, Guatemala).—BANGS, Bull. Mus. Comp. Zool., xxxix, 1903, 151 (Céiba and Yaruca, Honduras crit.).—DEARBORN, Pub. 125, Field Mus. N. H., 1907, 108 (Mazatenango, San José, and Patulúl, Guatemala; crit.).

[*Picolaptes*] *compressus* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 68, part.—SHARPE, Hand-list, iii, 1901, 84, part.

*Picolaptes compressus insignis* NELSON, Auk, xiv, Jan., 1897, 54 (Otatitlán, Vera Cruz; coll. U. S. Nat. Mus.).

[*Picolaptes*] *compressus insignis* BANGS, Bull. Mus. Comp. Zool., xxxix, 1903, 151 (diagnosis).

[*Picolaptes*] *insignis* SHARPE, Hand-list, iii, 1901, 84.

(?) *Picolaptes saturator* UNDERWOOD, Bull. Brit. Orn. Club, vii, no. lv, June 30, 1898, p. lix (Gualán, Guatemala; coll. ———?;=Young?); Ibis, 1898, 613 (reprint).

(?) [*Picolaptes*] *saturator* SHARPE, Hand-list, iii, 1901, 84.



## Genus CAMPYLORHAMPHUS Bertoni.

*Xiphorhynchus* (not of Swainson, 1827 <sup>a</sup>) AUTHORS.

*Xiphorhynchus* (emendation) MAXIMILIAN, Beitr. Naturg. Bras., iv, pt. iii, 1831, 1139.

*Xiphorhynchus* (emendation?) SWAINSON, Classif. Birds, ii, 1837, 313.

*Campylorhamphus* <sup>b</sup> BERTONI, Aves Nuevas del Paraguay, 1901, 70. (Type, *C. longirostris* Bertoni=*Dendrocolaptes procurvus* Temminck.)

*Xiphornis* <sup>c</sup> OBERHOLSER, Smithsonian Misc. Coll., Quart. Issue, xlviii, no. 1579, May 13, 1905, 64, in text. (Type, *Dendrocolaptes procurvus* Temminck.)

Medium sized Dendrocolaptidæ (length about 200–250 mm.) with excessively elongated, slender, compressed, and strongly arched bill and broadly oval nonoperculate nostrils.

Bill very much longer than head, more than twice as long as tarsus, slender, compressed, conspicuously decurved or arched, its width at latero-frontal antiæ much less than its depth at same point and equal to less than one-twelfth the distance from nostril to tip of maxilla; culmen rounded (not ridged), very strongly decurved from base; tomia strongly decurved, without trace of subterminal notch; gonys deeply concave and decurved, though nearly straight terminally. Nostril exposed, posteriorly in contact with latero-frontal feathering, more or less broadly oval, nonoperculate. Rictal bristles absent, and feathers of chin, etc., without terminal setæ. Wing moderate, rather rounded, the longest primaries exceeding secondaries by much less than length of tarsus; seventh and eighth, or sixth, seventh, and eighth, primaries longest, the tenth (outermost) two-thirds to nearly three-fourths as long as the longest, the ninth intermediate between third and fourth (*C. venezuelensis*) or between fifth and sixth (*C. pusillus*). Tail nearly as long as wing, graduated one-fourth to more than one-third its length, the rectrices (12) acuminate, with their very strong and rigid shafts decurved terminally. Tarsus about one-fourth as long as wing, distinctly scutellate (endaspidean); middle toe, with claw, a little longer than tarsus; outer toe (with or without claw) as long as middle toe; inner toe, without claw, reaching to a little beyond subterminal articulation of middle toe; hallux decidedly shorter than inner toe, decidedly (but not conspicuously) stouter; middle toe united to outer toe for whole of its first and about half of its second phalanx (for first and second phalanges of outer toe), to inner toe for whole of its first phalanx;

<sup>a</sup> As Mr. Oberholser states (Smithsonian Misc. Coll., xlviii, 1905, 62) while "Swainson evidently intended to make *Dendrocolaptes procurvus* Temminck the type of *Xiphorhynchus*, he defeated his purpose by allowing the previous publication of *Xiphorhynchus* in combination with the name of a species of another group, such publication being quite sufficient to fix the name of a genus."

<sup>b</sup> κάμψλος, bent, curved; ῥάμφος, bill. (Bertoni.)

<sup>c</sup> ξίφος, ensis, and ὄρνις, avis. (Oberholser.)

anterior claws large, very strongly curved and acute, that of the hallux less strongly curved, shorter than the digit.

*Coloration*.—Rump, upper tail-coverts, tail, and greater part of wings chestnut; back and scapulars brown, olive, or rufescent, the former sometimes narrowly streaked with paler, under parts lighter brown, more or less distinctly streaked, at least on chest, with paler, the throat sometimes dull whitish or buffy.

*Nidification*.—Nests in holes of trees; eggs plain white.

*Range*.—Costa Rica to Cayenne, southeastern Brazil, Paraguay, Bolivia, and Peru. (About twelve species.<sup>a</sup>)

KEY TO THE SPECIES OF CAMPYLORHAMPHUS.

a. Bill light reddish brown.

b. Streaks on back and chest margined with black. (Western Ecuador.)

*Campylorhamphus thoracicus* (extralimital).<sup>b</sup>

bb. Streaks on back and chest without black margins.

c. Back cinnamon-rufous, under parts dull tawny or ochraceous. (Southwestern Brazil; Paraguay.).....*Campylorhamphus rufodorsalis* (extralimital).<sup>c</sup>

cc. Back olive-brown to cinnamon-brown; under parts light buffy brown to olive-brown.

d. Streaks on pileum, hindneck, and chest much broader.

e. Remiges and rectrices cinnamon-rufous; under parts paler, more buffy, brown. (*Campylorhamphus trochilirostris*.)

f. Bill and tail much longer (culmen 69, tail 87 mm.); lower throat more broadly streaked. ("Brazil.")

*Campylorhamphus trochilirostris major* (extralimital).<sup>d</sup>

ff. Bill and tail much shorter (culmen 55–59, tail 77–83 mm.), the former much more slender; lower throat more narrowly streaked. (Bahia to lower Amazon Valley, eastern Brazil.)

*Campylorhamphus trochilirostris trochilirostris* (extralimital).<sup>e</sup>

<sup>a</sup> The following have not been examined in this connection: *C. thoracicus* (Sclater), *C. lafresnayeanus* (D'Orbigny), and *C. dorso-immaculatus* (Chapman).

<sup>b</sup> *Xiphorhynchus thoracicus* Sclater, Proc. Zool. Soc. Lond., Aug., 1860, 277 (Babahoyo, w. Ecuador; coll. P. L. Sclater); Chapman, Bull. Am. Mus. N. H., ii, 1889, 160 (monogr.).—*Xiphornis thoracicus* Oberholser, Smithsonian. Misc. Coll., xlviii, no. 1579, May 13, 1905, 64.—*Xiphorhynchus trochilirostris thoracicus* Hartert, Novit. Zool., ix, Dec., 1902, 616 (San Javier and Pambilár, n. w. Ecuador).

<sup>c</sup> *Xiphorhynchus rufodorsalis* Chapman, Bull. Am. Mus. N. H., ii, no. 3, July 5, 1889, 160 (Corumbá, Matto Grosso, s. w. Brazil; Coll. Am. Mus. Nat. Hist.).—*Xiphornis rufodorsalis* Oberholser, Smithsonian. Misc. Coll., xlviii, no. 1579, May 13, 1905, 64.

<sup>d</sup> *Campylorhamphus trochilirostris major* Ridgway, new subspecies. (Type, no. 32819, coll. U. S. Nat. Mus.; adult male; "Brésil;" from Maison Verreaux.)

<sup>e</sup> *D[endrocolaptes] trochilirostris* Lichtenstein, Abh. Königl. Akad. Wissensch. Berlin, for 1818–19 (1820), 207, pl. 3 (Brazil; coll. Berlin Mus.; type locality given as Bahia in next vol., p. 263).—*X[iphorhynchus] trochilirostris* Maximilian, Beitr. Naturg. Bras., iii, 1831, 1140 (excl. syn. part).—*Xiphorhynchus trochilirostris* Sclater, Cat. Birds Brit. Mus., xv, 1890, 159, part; Chapman, Bull. Am. Mus. N. H., ii, 1889, 155 (monogr.; excl. syn. *Dendrocolaptes procurvus* Temminck?); Menegaux and Hellmayr, Mém. Soc. Hist. Nat. d'Autun, xix, 1906, 117 (Bahia; crit.; synonymy).—*Xiphornis trochilirostris* Oberholser, Smithsonian. Misc. Coll., xlviii, no. 1579, May 13, 1905, 64.

- ee. Remiges and rectrices chestnut; under parts deeper, more olive, brown. (Venezuela to eastern Panamá.)

*Campylorhamphus venezuelensis* (p. 271).

- dd. Streaks on pileum, hindneck, and chest much narrower.

- e. Pileum, hindneck, back, and under parts more cinnamonaceous or russet brown; throat mostly unstreaked; streaks on pileum, chest, etc., more distinct. (Eastern Brazil.)

*Campylorhamphus procurvus?* (extralimital).<sup>a</sup>

- ee. Pileum, hindneck, back, and under parts darker and more olive-brown; throat mostly streaked; streaks on pileum, chest, etc., less distinct. (Guianas.).....*Campylorhamphus procurvoides* (extralimital).<sup>b</sup>

- aa. Bill horn brown or dusky.

- b. Throat buff, streaked with dusky brown; pileum sooty (more or less dark) streaked with brownish buff; rump rufescent, like upper tail-coverts; bill paler horn brown.

- c. Coloration darker, the pileum blackish brown, remiges and rectrices dark chestnut; streaks on pileum, hindneck, and under parts narrower.

- d. Paler, with under parts less olivaceous and less extensively streaked, the back unstreaked. (Central Colombia.)

*Campylorhamphus pusillus* (extralimital).<sup>c</sup>

- dd. Darker, with under parts more olivaceous and more extensively streaked, and back narrowly streaked. (Western Panamá; Costa Rica.)

*Campylorhamphus borealis* (p. 272).

- cc. Coloration lighter, the pileum sepia brown, remiges and rectrices clear chestnut; streaks on pileum, hindneck, and under parts broader. (Range unknown.).....*Campylorhamphus chapmani* (extralimital).<sup>d</sup>

- bb. Throat immaculate dull white; pileum and hindneck black, streaked with brownish white or pale brownish buff; rump olive-brown, like back; bill darker brown. (Brazil.).....*Campylorhamphus falcularius* (extralimital).<sup>e</sup>

NOTE.—Until a much greater amount of material than has been available in the preparation of this key can be examined, it would be quite useless to more than guess at which of the above-defined forms are specifically and which only subspecifically distinct.

<sup>a</sup> (?) *Dendrocolaptes procurvus* Temminck, Pl. Col., iv, livr. 5, Aug., 1820, text to pl. 28 (Brazil).

All specimens of this form that I have seen are from Bahia.

<sup>b</sup> *Xiphorhynchus procurvoides* Lafresnaye, Rev. et Mag. de Zool., 1850, 376 (Cayenne); Chapman, Bull. Am. Mus. N. H., ii, 1889, 158 (monogr.).—*Xiphorhynchus trochilirostris* (not *Dendrocolaptes trochilirostris* Lafresnaye) Sclater, Cat. Birds Brit. Mus., xv, 1890, 159, part.—*Xiphorhynchus subprocurvus* Reichenbach, Handb. Spec. Orn., 1853, 183.—*Xiphornis subprocurvus* Oberholser, Smithson. Misc. Coll., xlviii, no. 1579, May 13, 1905, 64.

<sup>c</sup> *Xiphorhynchus pusillus* Sclater, Proc. Zool. Soc. Lond., 1860, 278 (Colombia; coll. P. L. Sclater); Cat. Birds Brit. Mus., xv, 1890, 160, part (Bogotá and Concordia, Colombia; Ecuador?); Hartert, Novit. Zool., ix, 1902, 616 (Ventana, n. w. Ecuador; crit.).

<sup>d</sup> *Campylorhamphus chapmani* Ridgway, Proc. Biol. Soc. Wash., xxii, April 17, 1909, 74 ("unknown locality in South America;" coll. Am. Mus. Nat. Hist.).

<sup>e</sup> *Dendrocopus falcularius* Vieillot, Tabl. Enc. Méth., 1822, 626 (Brazil).—*Xiphorhynchus falcularius* Gray, Gen. Birds, i, Feb., 1847, 140.—*Xiphorhynchus falcularius* Chapman, Bull. Am. Mus. N. H., ii, 1889, 161 (monogr.); Menegaux and Hellmayr, Mém. Soc. Hist. Nat. d'Autun, xix, 1906, 115 (crit.; synonymy).—*Xiphornis falcularius* Oberholser, Smithson. Misc. Coll., xlviii, no. 1579, May 13, 1905, 64.



## CAMPYLORHAMPHUS VENEZUELENSIS (Chapman).

## VENEZUELAN SICKLE BILL.

*Adults (sexes alike).*—Pileum deep sepia or bister brown, each feather with a mesial guttate streak of dull buff or clay color, the hindneck similar but the ground color slightly lighter brown; back and scapulars lighter, more fulvous or russet, brown (between raw-umber and russet or mars brown), the upper back usually with more or less distinct narrow mesial streaks of pale dull buffy; rump more rufescent brown than back, the upper tail-coverts still more strongly rufescent (nearly cinnamon-rufous); tail and remiges, including shafts, plain chestnut, the wing-coverts similar but duller (intermediate between color of remiges and that of back); sides of head and neck rather broadly streaked with deep sepia brown and pale dull buffy; chin and throat pale dull buffy or dull buffy whitish, the feathers of throat rather broadly edged with sepia brown, producing distinct streaks; foreneck and chest light brown (between raw-umber and isabella color), with rather broad mesial linear streaks of pale buffy or dull buffy whitish, the breast similar but with the streaks narrower and less distinct; rest of under parts similar but slightly paler and with streaks obsolete (absent on flanks and thighs); under wing-coverts deep ochraceous-buff, paler and usually indistinctly flecked with pale brownish along edge of wing; inner webs of remiges vinaceous-cinnamon, the outer primaries passing into grayish brown terminally; bill light reddish brown (nearly cinnamon-rufous); iris brown; legs and feet dusky horn color or olive (in dried skins).

*Adult male.*—Length (skins), 226–252 (239); wing, 92–96.5 (94); tail, 72–81 (78); culmen (chord), 60–66 (62); tarsus, 21.5–22 (21.8); middle toe, 16.5–18 (17.5).<sup>a</sup>

*Adult female.*—Length (skins), 224–227 (225); wing, 88–96 (91.3); tail, 73.5–82.5 (78.3); culmen (chord), 58–64 (60.7); tarsus, 21–22 (21.5); middle toe, 17–18 (17.5).<sup>b</sup>

<sup>a</sup> Three specimens, from Panamá.

<sup>b</sup> Three specimens—one from Venezuela, two from Panamá.

| Locality.                                              | Wing. | Tail. | Culmen. | Tarsus. | Middle toe. |
|--------------------------------------------------------|-------|-------|---------|---------|-------------|
| FEMALES.                                               |       |       |         |         |             |
| One adult female from Venezuela.....                   | 96    | 82.5  | 58      | 22      | 17.5        |
| Two adult females from eastern Panamá (Lion Hill)..... | 89    | 76.2  | 62      | 21.2    | 17.5        |

In all probability, comparison of good series of specimens will show that the Panamá bird is separable from that of Venezuela.

Venezuela (San Esteban; Carácas; Cumanacoa, Bermudez), Colombia (Bogotá; Remédios, Antioquia), and eastern Panamá (Lion Hill and Frijole stations; Panamá).

*Xiphorhynchus lafresnayanus* (not *Dendrocolaptes lafresnayanus* D'Orbigny) LAWRENCE, Ann. Lyc. N. Y., vii, 1862, 292 (Lion Hill, Panamá).

*Xiphorhynchus trochilirostris* (not *Dendrocolaptes trochilirostris* Lichtenstein) SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1879, 524 (Remédios, Antioquia, Colombia; descr. nest and eggs).—SCLATER, Cat. Birds Brit. Mus., xv, 1890, 159, part (Lion Hill, Panamá; Remédios and Bogotá, Colombia; San Esteban and Carácas, Venezuela).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1891, 188, excl. syn. part (Lion Hill; Colombia; Venezuela).—BANGS, Proc. New Engl. Zool. Club, ii, 1900, 26 (Loma del León, Panamá).

[*Xiphorhynchus*] *trochilirostris* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 69, part.—SHARPE, Hand-list, iii, 1901, 86, part.

*Xiphorhynchus venezuelensis* CHAPMAN, Bull. Am. Mus. N. H., ii, no. 3, July, 1889, 156 (Venezuela?; type in coll. Bost. Soc. N. H.; ex Lafresnaye, MS., Gray, Hand-list, i, 1869, 178, no. 2423, and Giebel, Thes. Orn., 1877, 766=nomen nudum).

*Xiphornis venezuelensis* OBERHOLSER, Smithsonian Misc. Coll., xlviii, no. 1579, May 13, 1905, 64.

*Xiphorhynchus isabella* "Verr.," GRAY, Hand-list, i, 1869, 178, no. 2429 (nomen nudum; ex Verreaux, MS.; =isabelline or semi-albinistic variety; see Chapman, Bull. Am. Mus. N. H., ii, no. 3, 1889, 157).

#### CAMPYLORHAMPHUS BOREALIS (Carriker).

##### COSTA RICAN SICKLE BILL.

Similar to *C. venezuelensis*, but coloration much darker, under parts much more olivaceous with streaks much narrower, and bill horn color instead of light reddish brown.

*Adults (sexes alike).*—Pileum dark sooty brown to sooty black, each feather with a narrow (usually guttate) streak of buff, the hindneck similar but with the ground color slightly less dark; back and scapulars deep brown (between raw-umber and mummy brown), with very narrow mesial streaks or shaft-streaks of light buff, at least on upper back; rump cinnamon-rufous, passing into rufous-chestnut on upper tail-coverts, the tail and remiges deep chestnut; wing-coverts similar in color to remiges but duller (tinged with color of back); sides of head and neck streaked with sooty brown or blackish and buff, the markings on malar region broader, more spot-like; chin and throat deep buff, the feathers of the latter edged (sometimes terminally margined also) with sooty brown or blackish, the streaks thus produced increasing in width posteriorly; rest of under parts deep raw-umber brown, slightly paler (sometimes slightly rufescent) posteriorly, the foreneck, chest, and breast with narrow mesial streaks of buff, the under tail-coverts (sometimes abdomen also) with much narrower and more indistinct streaks; under wing-coverts ochraceous or tawny-ochraceous, the inner webs of remiges light cinnamon-rufous, passing into dull grayish brown terminally (exten-

sively on outer primaries); bill horn brownish, darker on basal and terminal portions of maxilla, paler on mandible (at least on lower middle portion); iris brown; legs and feet dusky horn color or dark olive (in dried skins).

*Young*.—Similar to adults, but coloration darker, streaks darker buff or clay color (those on back broader), exposed surface of remiges (in closed wing) mostly olive-brown, and bill nearly black.

*Adult male*.—Length (skins), 202–233 (223); wing, 89.5–103 (96.9); tail, 81–100.5 (89.6); culmen (chord), 48–57 (54.4); tarsus, 20–21.5 (21); middle toe, 17.5–19 (18.1).<sup>a</sup>

*Adult female*.—Length (skins), 215–230 (223); wing, 90.5–99 (94.1); tail, 79–91 (84.6); culmen (chord), 55–61 (57.5); tarsus, 21–22.5 (21.6); middle toe, 17–19 (17.9).<sup>b</sup>

Costa Rica (Naranjo, La Estrella, Azahár, and Birris, Cartago; Guápiles; Guácimo; La Hondura; El Hogár; Carrillo; Jiménez; Guayabo; Cariblanco de Sarapiquí; El General; Cervantes; Río Súcio) and western Panamá (Volcán de Chiriquí, 700 feet, and Caribbean slope; Chitra; Boquete de Chitra).

*Xiphorhynchus pusillus* (not of Sclater, 1860?) SCLATER, Cat. Birds Brit. Mus., xv, 1890, 160, part (Boquete de Chitra, Chitra, and Chiriquí, Panamá; Costa Rica).—SALVIN, Proc. Zool. Soc. Lond., 1870, 193 (Boquete de Chitra, Panamá; crit.).—BOUCARD, Proc. Zool. Soc. Lond., 1878, 60 (Naranjo de Cartago, Costa Rica).—ZELEDÓN, Anal. Mus. Nac. Costa Rica, i, 1888, 114 (Birris de Cartago and Jiménez, Costa Rica).—CHAPMAN, Bull. Am. Mus. N. H., ii, 1889, 157, part (monogr.).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1891, 189, pl. 48, fig. 2.

[*Xiphorhynchus*] *pusillus* GRAY, Hand-list, i, 1869, 178, no. 2430.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 69, part.—SHARPE, Hand-list, iii, 1901, 86 (Costa Rica; Panamá).

*Xiphornis pusillus* OBERHOLSER, Smithsonian Misc. Coll., xlviii, no. 1579, May 13, 1905, 64.

*Xiphorhynchus grandis* "CHERRIE" BANGS, Proc. New Engl. Zool. Club, iii, Jan. 30, 1902, 48 (Volcán de Chiriquí, 700 ft., Panamá; =nomen nudum!).

*Campylorhamphus pusillus borealis* CARRIKER, Ann. Carnegie Mus., vi, "Aug. 29" (=Sept. 7), 1910, 657 (El Hogár, e. Costa Rica; coll. Carnegie Mus.).

<sup>a</sup> Twelve specimens.

<sup>b</sup> Nine specimens, from Costa Rica.

| Locality.                                | Wing. | Tail. | Culmen. | Tarsus. | Middle toe. |
|------------------------------------------|-------|-------|---------|---------|-------------|
| MALES.                                   |       |       |         |         |             |
| Ten adult males from Costa Rica.....     | 97.3  | 90.7  | 54.2    | 21      | 18.1        |
| Two adult males from western Panamá..... | 94.7  | 85    | 55.5    | 21.2    | 18          |



## Genus GLYPHORYNCHUS Maximilian.

*Glyphorhynchus* MAXIMILIAN, Beitr. Naturg. Bras., iii, pt. ii, 1831, 1149. (Type, *G. ruficaudus* Maximilian=*Dendrocolaptes cuneatus* Lichtenstein.)

*Glyphorhynchus* (emendation) STRICKLAND, Proc. Zool. Soc. Lond., 1841, 28, in text.

*Sphenorhynchus* MAXIMILIAN, Beitr. Naturg. Bras., iii, pt. ii, 1831, 1278. (Type, *Glyphorhynchus ruficaudus* Maximilian=*Dendrocolaptes cuneatus* Lichtenstein.)

*Zenophasia* SWAINSON, Anim. in Menag., 1838, 351. (Type, *Z. platyryncha* Swainson=*Dendrocolaptes cuneatus* Lichtenstein.)

*Sittacilla* LESSON, Compl. de Buffon, ix, 1837, 135. (Type, *Dendrocolaptes cuneatus* Lichtenstein.)

Small *Dendrocolaptidæ* (length about 140 mm.) with bill much shorter than head, stout, wedge-shaped, with maxilla broad and flattened terminally; nostril narrow, broadly operculate, and tail (nearly as long as wing) with the very rigid rectrices very strongly decurved terminally.

Bill much shorter than head, stout, wedge-shaped, its width at latero-frontal antiæ decidedly greater than its depth at same point and equal to about half the distance from nostril to tip of maxilla; culmen broad and rounded (not ridged), straight basally, rather suddenly depressed terminally, the tip of maxilla broad and rounded in vertical profile but acute in lateral aspect; maxillary tomium nearly straight, but slightly incised or faintly notched terminally; mandibular tomium straight or very faintly concave (the mandible very slightly recurved terminally); gonys strongly convex and rather prominent basally, nearly straight and strongly ascending terminally. Nostril exposed, posteriorly in contact with latero-frontal feathering, narrow (slit-like), longitudinal, overhung by a very broad and conspicuous operculum and, also margined below by the integument of the nasal fossa. Rictal bristles present but minute, and feathers of chin and lores with minute terminal setæ. Wing moderate, rather pointed, the longer primaries exceeding secondaries by more than length of exposed culmen; seventh and eighth primaries longest, the tenth (outermost) about three-fourths as long as the longest, the ninth about equal to sixth. Tail nearly as long as wing, graduated for one-third, or more, of its length, the rectrices (12) acuminate, with the very strong and excessively rigid shafts very strongly decurved terminally. Tarsus much longer than culmen (from base); about one-fourth as long as wing, distinctly scutellate (endaspidean); middle toe, with claw, decidedly shorter than tarsus; outer toe, with or without claw, as long as middle toe; inner toe, without claw, reaching to middle of subterminal phalanx of middle toe; hallux conspicuously shorter than inner toe, not stouter; middle toe united to outer toe for whole of first and part of second phalanx, to inner toe for whole of its first phalanx; anterior claws large, very strongly curved and acute, that of the hallux much less curved, about as long as the digit.

*Coloration*.—Above plain olive-brown, the tail, upper tail-coverts, and secondaries chestnut; beneath light olive, the chest with cuneate spots of pale buff or whitish, the throat buff spotted or flecked with olive; inner webs of remiges crossed by a broad band of buff or ochraceous.

*Nidification*.—Nests in holes; eggs white.

*Range*.—Southern Mexico to Cayenne, Brazil and Ecuadór. (Two species.<sup>a</sup>)

KEY TO THE SUBSPECIES OF GLYPHORYNCHUS CUNEATUS.

*a*. Under parts paler, with chest indistinctly streaked or nearly uniform grayish brown, the chin and throat paler buffy. (Brazil, etc.)

*Glyphorynchus cuneatus cuneatus* (extralimital).<sup>b</sup>

*aa*. Under parts darker, with chest more conspicuously marked with triangular or wedge-shaped spots or streaks of buffy; chin and throat deeper buff. (South-eastern Mexico to Panamá.).....*Glyphorynchus cuneatus pectoralis* (p. 275).

GLYPHORYNCHUS CUNEATUS PECTORALIS (Sclater).

NORTHERN WEDGEBILL.

Similar to *G. c. cuneatus* Lichtenstein, of Brazil, but under parts darker, chin and throat more deeply buffy and triangular or wedge-shaped markings on chest larger and more distinct.

*Adults (sexes alike)*.—Pileum sooty brown or sepia, the forehead usually indistinctly streaked or flecked with paler brown or dull buffy; back and scapulars plain raw-umber or russet-brown, passing into cinnamon-rufous on rump and upper tail-coverts; tail deeper cinnamon-rufous or rufous-chestnut, the shafts of rectrices bright cinnamon-rufous or orange-rufous; wings similar in color to back but slightly more rufescent, the proximal secondaries (tertials) dull cinnamon-rufous; a narrow superciliary stripe of dull buff or buffy whitish, broken by small streaks of brown; auricular region sooty brown, narrowly streaked with dull buff or buffy whitish, the sub-orbital region with small spots or flecks of the same; chin and throat buff to tawny-buff, the feathers (except, sometimes, those of chin)

<sup>a</sup> I have not seen *G. castelnaudi* Des Murs, which possibly is only a subspecies of *G. cuneatus* (Lichtenstein). (*Glyphorhynchus castelnaudi* Des Murs, in Castelnau's Expéd., Ois., 1855, 47, pl. 15, fig. 2.)—*Glyphorhynchus cuneatus castelnaudi* Berlepsch and Taczanowski, Proc. Zool. Soc. Lond., 1883, 563 (Chimbo, n. w. Ecuador; crit.).

<sup>b</sup> *D[endrocolaptes] cuneatus* Lichtenstein, Abh. Königl. Ak. Wissensch, Berlin for 1818-19 (1820), 204, pl. 2, fig. 2 (locality not given, but in vol. for 1822, p. 266, given as Bahia, Brazil; coll. Berlin Mus.).—*Glyphorhynchus cuneatus* Strickland, Proc. Zool. Soc. Lond., 1841, 28, in text; Sclater, Cat. Birds Brit. Mus., xv, 1890, 124, part.—*Glyphorhynchus cuneatus cuneatus* Menegaux and Hellmayr, Mém. Soc. Hist. Nat. d'Autun, xix, 1906, 97 (crit.).—*G[lyphorhynchus] ruficaudus* Maximilian, Beitr. Naturg. Bras., iii, pt. ii, 1831, 1150 (Brazil; type now in coll. Am. Mus. Nat. Hist.; see Allen, Bull. Am. Mus. N. H., ii, 1889, 248).—*Zenophasia platyryncha* Swainson, Anim. in Menag., pt. iii, Jan. 1, 1838, 352 (Brazil; coll. W. Swainson).—*Sittasomus flammulatus* Lesson, Traité d'Orn., 1831, 315 (Brazil?; coll. Paris Mus.).

margined with sooty brown or dusky; rest of under parts light raw-umber or tawny-olive, darker on chest, where the feathers have a large and conspicuous mesial cuneate or broadly fusiform mark of light buff, the feathers of breast with more or less distinct narrow mesial streaks, or shaft-streaks, of the same; under tail-coverts cinnamomeous with narrow mesial streaks of paler; under wing-coverts mostly white or pale yellowish buff, the carpo-metacarpal area brown; inner webs of remiges (except three outer primaries) crossed obliquely, near middle portion, by a broad band of ochraceous-buff (usually passing into paler buff toward edge of the web); maxilla dusky brown, mandible paler brown or horn color; iris brown; legs and feet horn color or dusky (in dried skins).

*Adult male*.—Length (skins), 133–156 (145); wing, 69.5–80.5 (75.5); tail, 65–76.5 (70); culmen, 11–13.5 (13); tarsus, 16–18 (17); middle toe, 9.5–11 (10.2).<sup>a</sup>

*Adult female*.—Length (skins), 130–151 (140.7); wing, 65–74 (70.3); tail, 57.5–67 (63); culmen, 11–13.5 (12.6); tarsus, 16–17 (16.6); middle toe, 9.5–10.5 (10.1).<sup>b</sup>

Southeastern Mexico, in State of Vera Cruz (Tolosa; Buena Vista); Guatemala (Choctúm; Yzabál; Los Amates, Yzabál; sources of Rio de la Pasión), British Honduras (forest near Manatee Lagoon), Honduras (Rio Segóvia), Nicaragua (Greytown; Rio San Juan; Los Sábalo; Rio Escondido), Costa Rica (Tucurríqui; Naranjo de Cartago; Rio Reventazón; Rio Frio; Boca de Rio Matina; Rio Sicsola; Pacuare; Cuabre; Guápiles; Carrillo; La Cristina; La

<sup>a</sup> Nineteen specimens.

<sup>b</sup> Seventeen specimens.

| Locality.                                                         | Wing. | Tail. | Culmen. | Tarsus. | Middle toe. |
|-------------------------------------------------------------------|-------|-------|---------|---------|-------------|
| MALES.                                                            |       |       |         |         |             |
| Two adult males from Vera Cruz, Mexico.....                       | 73.3  | 69    | 13.5    | 17      | 10.5        |
| Two adult males from southern Honduras.....                       | 75    | 66.3  | 13      | 17.3    | 10.3        |
| Five adult males from Nicaragua.....                              | 75.6  | 70.6  | 13.1    | 16.9    | 9.8         |
| Ten adult males from Costa Rica.....                              | 75.8  | 70.6  | 12.9    | 17      | 10.3        |
| One adult male ( <i>G. c.</i> —?) from northwestern Colombia..... | 73    | 65    | 11      | 15.5    | 10          |
| Four adult males ( <i>G. c.</i> —?) from Venezuela.....           | 70.6  | 65.2  | 11.9    | 15.7    | 9           |
| Two adult males ( <i>G. c. cuncatus</i> ) from Brazil.....        | 69.3  | 64    | 13.5    | 17      | 11          |
| FEMALES.                                                          |       |       |         |         |             |
| Two adult females from Vera Cruz, Mexico.....                     | 73    | 66.3  | 13.5    | 16.3    | 10          |
| One adult female from British Honduras.....                       | 69    | 65    | 13      | 16.5    | 10.5        |
| Two adult females from Nicaragua.....                             | 70.5  | 64    | 13.3    | 16.3    | 10.5        |
| Ten adult females from Costa Rica.....                            | 70.6  | 62    | 12.4    | 16.6    | 10          |
| One adult female from western Panamá.....                         | 69.9  | 57.5  | 12      | 16.5    | 10          |
| One adult female from eastern Panamá.....                         | 67.5  | 60    | 12      | 17      | 10          |
| One adult female ( <i>G. c.</i> —?) from Venezuela.....           | 65    | 58    | 12      | 15.5    | 9.5         |
| Two adult females ( <i>G. c. cuncatus</i> ) from Brazil.....      | 67.8  | 63    | 13      | 16      | 10          |



Florida; El Hogár; La Hondura; Jiménez; Turrialba; Bonilla; El General; La Vijagua; Palmár; Pozo Azul de Pirris; Pozo del Rio Grande; Pozo del Pitál; Buenos Aires), and Panamá (Bugaba; Mina de Chorchá; Volcán de Chiriquí, 7,000 feet; Chitra; Panamá).

*Glyphorhynchus cuneatus* (not *Dendrocolaptes cuneatus* Lichtenstein) SCLATER, Proc. Zool. Soc. Lond., 1858, 63 (s. Mexico); Cat. B. Brit. Mus., xv, 1890, 124, part (Yzabál, sources Rio de la Pasión, and Choctúm, Guatemala; Tucuríqui, Costa Rica; Bugaba and Mina de Chorchá, Veragua; Panamá).—SCLATER and SALVIN, Ibis, 1860, 35 (Yzabál, Guatemala); Nom. Av. Neotr. 1873, 67, part.—LAWRENCE, Ann. Lyc. N. Y., vii, 1862, 320 (Lion Hill, Panamá).—SUMICHRAST, La Naturaleza, v, 1881, 248 (Uvero, Vera Cruz).—SALVIN, Ibis, 1866, 205 (Guatemala).—BOUCARD, Proc. Zool. Soc. Lond., 1878, 60 (Naranjo, Costa Rica).—NUTTING, Proc. U. S. Nat. Mus., vi, 1883, 404 (Los Sábalos, Nicaragua; habits).—ZELEDÓN, Anal. Mus. Nac. Costa Rica, i, 1888, 113 (Pacuare, Pozo Azul de Pirris, and Naranjo de Cartago, Costa Rica).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1891, 175, part (Mexican and Central American references and localities).—CHERRIE, Expl. Zool. Merid. Costa Rica, 1893, 40 (Palmár, Costa Rica); Anal. Inst. Fis.-Geog. Costa Rica, vi, 1893, 17 (Pozo del Pitál, Costa Rica).—RICHMOND, Proc. U. S. Nat. Mus., xvi, 1893, 497 (Rio Escondido, Nicaragua; habits; descr. nest and eggs).—BANGS, Proc. New Engl. Zool. Club, iii, 1902, 46 (Volcán de Chiriquí, 7,000 ft., Panamá); Auk, xxiv, 1907, 299 (Pozo del Rio Grande, Costa Rica).—DEARBORN, Pub. 125, Field Mus. N. H., 1907, 107 (Los Amates, Guatemala; crit.).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 648 (Costa Rica; habits; descr. nest and eggs).

*Glyphorhynchus cuneatus*? SALVIN and SCLATER, Ibis, 1860, 35 (Yzabál, Guatemala).

[*Glyphorhynchus*] *cuneatus* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 67, part.—SHARPE, Hand-list, iii, 1901, 74, part (Mexico to Panamá).

*Glyphorhynchus cuneatus* BOUCARD, Ann. Soc. Linn. Lyon, 1878, 38 (Guatemala).

*Glyphorhynchus pectoralis* SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1860, 299 (Choctúm, Vera Paz, Guatemala; coll. Salvin and Godman); 1864, 354 (Lion Hill, Panamá; crit.).—LAWRENCE, Ann. Lyc. N. Y., viii, 1867, 181 (Greytown, Nicaragua); ix, 1868, 106 (Costa Rica).—FRANTZIUS, Journ. für Orn., 1869, 305 (Costa Rica).—SALVIN, Proc. Zool. Soc. Lond., 1870, 192 (Bugaba, Mina de Chorchá, and Volcán de Chiriquí, Veragua).

*Glyphorhynchus major* SCLATER, Cat. Am. Birds, 1862, 161 (Choctúm, Vera Paz, Guatemala; coll. P. L. Sclater); Proc. Zool. Soc. Lond., 1862, 369 (s. Mexico).

*Glyphorhynchus major* SUMICHRAST, Mem. Bost. Soc. N. H., i, 1869, 555 (hot zone, Vera Cruz).

[*Glyphorhynchus*] *major* GRAY, Hand-list, i, 1869, 181, no. 2481.

*Xiphorhynchus major* SANCHEZ, Anal. Mus. Nac. Mex., i, 1877, 97 (Vera Cruz).

### Genus SITTASOMUS Swainson.

*Sittasomus* SWAINSON, Zool. Journ., iii, 1827, 355. (Type, *Dendrocolaptes sylviellus* Temminck=*D. erithacus* Lichtenstein.)

*Sittosomus* (emendation) CABANIS and HEINE, Mus. Hein., ii, Aug., 1859, 33.

*Acanthurus*<sup>a</sup> (not *Acanthura* Guilding, 1827) BERTONI, Aves Nuevas del Paraguay, 1901, 72. (Type, *A. microrhynchus* Bertoni=*Dendrocolaptes erithacus* Lichtenstein.)

*Sylosella* LESSON, Traité d'Orn., 1830, 314. (New name for *Sittasomus* Swainson.)

<sup>a</sup>'' *Akantha*, thorn, prickly; *oôpa*, tail. (Bertoni.)

Small *Dendrocolaptidæ* (length about 140–160 mm.) with small slender bill, long, graduated tail with acuminate tips of very rigid rectrices strongly decurved, and inner webs of remiges crossed by a broad band of buff or ochraceous.

Bill much shorter than head, nearly subulate, rather broad and depressed basally, its width at latero-frontal antiæ much greater than its depth at same point and equal to half the distance from nostril to tip of maxilla or a little less; culmen distinctly ridged, gently decurved from near base; maxillary tomium nearly straight for most of its length, distinctly but slightly decurved terminally, without trace of subterminal notch, the tip of maxilla forming a fine, more or less distinctly decurved, point; gonys nearly straight and slightly ascending terminally, faintly convex basally. Nostril exposed, posteriorly in contact with latero-frontal feathering, narrow, nearly horizontal, margined above by a rather broad membranous operculum. Rictal bristles obvious but minute; feathers of chin and loreal region with small terminal setæ. Wing rather long and pointed, the longest primaries exceeding secondaries by about length of tarsus; eighth and ninth, or seventh and eighth, primaries longest, the tenth (outermost) about two-thirds as long as the longest. Tail equal to or longer than wing, graduated for one-third its length, or more, the rectrices (12) abruptly acuminate, with their very rigid shafts very strongly decurved and twisted subterminally. Tarsus much longer than culmen, slender, distinctly scutellate (endaspidean); middle toe, with claw, slightly shorter than tarsus; outer toe, with or without claw, as long as or very slightly longer than middle toe; inner toe, without claw, reaching to slightly beyond subterminal articulation of middle toe; hallux much shorter than inner toe, not stouter; middle toe united to outer toe by the whole of its first and about half its second phalanx, to inner toe by greater part of first phalanx; anterior claws large, very strongly curved and acute, that of the hallux much less curved, longer than the digit.

*Coloration*.—Rump, tail-coverts, tail, and secondaries cinnamon-rufous, chestnut, or rufous-tawny; pileum and hindneck grayish olive to tawny brown, the back similar or browner; under parts plain grayish olive to olive-ochraceous; inner webs of remiges crossed obliquely by a broad band of ochraceous-buff, and secondaries with an extensive subterminal (mostly concealed) area of black. Sexes alike.

*Nidification*.—Nests in holes; eggs white.

*Range*.—Southern Mexico to Venezuela, Tobago, southeastern Brazil, Paraguay, Argentina, Bolivia, and Ecuador. (About ten species and subspecies.)

KEY TO THE SPECIES AND SUBSPECIES OF *SITTASOMUS*.

- a. Pale band across inner web of remiges very sharply defined, very distinct on secondaries as well as on primaries, and in color distinctly yellowish.
- b. Tail and secondaries rufous-chestnut or deep cinnamon-rufous.
- c. Under parts olive-yellowish. (Southeastern Brazil, etc.)  
*Sittasomus erithacus* (extralimital).<sup>a</sup>
- cc. Under parts grayish olive or olive-grayish.
- d. Back mixed rusty and olive.
- e. More olivaceous, with much smaller bill; under wing-coverts and band across inner web of remiges deeper yellowish. (Southwestern Brazil, etc.).....*Sittasomus chapadensis* (extralimital).<sup>b</sup>
- ee. More grayish, with much larger bill; under wing-coverts and band across inner webs of remiges paler yellowish. (Upper Amazon Valley.)  
*Sittasomus amazonus* (extralimital).<sup>c</sup>
- dd. Back uniform russet brown. (*Sittasomus sylvioides*.)
- e. Smaller (male averaging, wing, 77.1; tail, 73.5; exposed culmen, 14 mm.). (Southeastern Mexico to Costa Rica.)  
*Sittasomus sylvioides sylvioides* (p. 280).
- ee. Larger (male averaging, wing, 84; tail, 77.5 or more; exposed culmen, 15.4 or more).
- f. Tail and bill shorter (tail averaging 77.5, exposed culmen 15.4). (Panama.).....*Sittasomus sylvioides levis* (p. 282).
- ff. Tail and bill longer (tail averaging 81, exposed culmen 16.5). (Western Mexico.).....*Sittasomus sylvioides jaliscensis* (p. 283).
- bb. Tail and secondaries clear tawny. (Western Ecuador.)  
*Sittasomus æquatorialis* (extralimital).<sup>d</sup>
- aa. Pale band across inner web of remiges not sharply defined, very indistinct on secondaries, in color white or yellowish white. (Tobago.)  
*Sittasomus griseus* (extralimital).<sup>e</sup>
- 
- <sup>a</sup> *D[endrocolaptes] erithacus* Lichtenstein, Abh. Königl. Akad. Wissensch. Berlin, for 1820-21 (1822), 259, 266, pl. 1, fig. 2 (Province of São Paulo, s. Brazil; coll. Berlin Mus.).—[*Sittasomus*] *erythacus* Bonaparte, Consp. Av., i, 1850, 209.—*Sittasomus erithacus* Lafresnaye, Rev. Zool., 1850, 589; Selater, Cat. Birds Brit. Mus., xv, 1890, 119; Ridgway, Proc. U. S. Nat. Mus., xiv, 1891, 508 (monogr.).—*Sittasomus sylviellus* Temminck, Pl. Col., livr. 12, Sept. 27, 1823, text to pl. 72, fig. 1; Menegaux and Hellmayr, Mém. Soc. Hist. Nat. d'Autun, xix, 1906, 95 (Goyaz, Brazil; crit.).—*Sittasomus sylviellus sylviellus* Hellmayr, Novit. Zool., xv, 1908, 63 (Goyaz and Faz. Esperança, Brazil).—*Acanthurus microrhynchus* Bertoni, Aves Nuevas del Paraguay, 1901, 72.—[*Sittasomus*] *olivaceus* Maximilian, Beitr. Naturg. Bras., iii, 1831, 1146.
- <sup>b</sup> *Sittasomus chapadensis* Ridgway, Proc. U. S. Nat. Mus., xiv, no. 877, Oct. 31, 1891, 509 (Chapada, Matto Grosso, s. w. Brazil; coll. Am. Mus. Nat. Hist.); Menegaux and Hellmayr, Mém. Soc. Hist. Nat. d'Autun, xix, 1906, 95 (Chiquitos, Bolivia; crit.).—*Sittasomus sylviellus chapadensis* Hellmayr, Novit. Zool., xv, 1908, 63 (Rio Theosouras, Brazil; crit.).
- <sup>c</sup> *Sittasomus amazonus* Lafresnaye, Rev. et Mag. de Zool., 1850, 509; Ridgway, Proc. U. S. Nat. Mus., xiv, 1891, 509 (monogr.); Menegaux and Hellmayr, Mém. Soc. Hist. Nat. d'Autun, xix, 1906, 96 (Yungas, Bolivia; up. Amazon).—*Sittasomus olivaceus amazonus* Hartert, Kat. Vogelsamml. Senckenb., 1891, 110 (Bolivia).
- <sup>d</sup> *Sittasomus æquatorialis* Ridgway, Proc. U. S. Nat. Mus., xiv, no. 877, Oct. 31, 1891, 509 (Guayaquil, w. Ecuador; coll. U. S. Nat. Mus.).
- <sup>e</sup> *Sittasomus griseus* Jardine, Ann. and Mag. N. H., xix, 1847, 82 (Tobago); Ridgway, Proc. U. S. Nat. Mus., xiv, 1891, 510 (monogr.).



## SITTASOMUS SYLVIDES SYLVIDES Lafresnaye.

MEXICAN SITTASOMUS.<sup>a</sup>

*Adults (sexes alike).*—Pileum and hindneck plain grayish olive, the sides of head and under parts (except under tail-coverts) similar but lighter; back and scapulars uniform russet, sometimes slightly tinged with olive, passing on rump, upper tail-coverts, and tail into clear deep cinnamon-rufous; wing-coverts similar in color to back and scapulars, but with an indistinct central area of grayish olive; secondaries deep cinnamon-rufous, with a large subterminal area (not crossing outer web) of dull black or dusky, this sharply defined anteriorly against a basal area of clear buff or ochraceous-buff on inner web; proximal (shorter) primaries similarly colored, but dusky subterminal area not so dark (more sooty brownish), cinnamon-rufous tip narrower and duller, and basal portion of outer web duller (dull ochraceous or cinnamon); distal (longer) primaries with outer web cinnamon, the three outermost with inner webs wholly dusky; alula and primary coverts grayish brown; axillars buff; under wing-coverts and broad oblique band across inner webs of remiges deep cream-buff or light ochraceous-buff; under tail-coverts cinnamon-rufous, the flanks sometimes tinged with the same; maxilla dusky horn color, paler along tomium; mandible paler with terminal portion dusky; iris brown; legs and feet horn color or dusky (in dried skins).

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<sup>a</sup> The utter impossibility of inventing English names for all of the thousands of species and subspecies of birds found in Tropical America necessitates the occasional use of the Greek or Latin generic name in cases where there is no native vernacular name to take the place of an English one. Unfortunately the native language is often very poor in bird-names, many diverse kinds being often grouped under one term, as *cóme-maiz* (corn-eater) for sparrows in general, or else the names in general use are borrowed from extremely different European birds. In Costa Rica, for example, the Spanish name *gorrión* (sparrow) is universally applied and practically restricted to hummingbirds, that of *calándria* (lark) to the three-caruncled bell-bird, and that of *jilguero* (linnet) to the *Myadestes* of that country.

The author is well aware that there are persons who imagine that the English language is equal to any emergency and resent the use of anything else; but the views of such would surely change were they to attempt the task of naming in English terms all of the American birds alone that are not already thus named.

*Adult male*.—Length (skins), 145–160 (152); wing, 65.5–82 (77.1); tail, 65.5–78 (73.5); culmen, 13–15.5 (14); tarsus, 15–18 (16.9); middle toe, 11–13.5 (12.1).<sup>a</sup>

*Adult female*.—Length (skins), 131–156 (142); wing, 66–80 (70.8); tail, 61.5–75 (67.1); culmen, 13–15 (13.9); tarsus, 15–17.5 (16.2); middle toe, 10.5–13 (11.7).<sup>b</sup>

Southeastern Mexico, in States of Vera Cruz (Córdova; Potrero, near Córdova; Jalapa; Miradór; Coátepec; Cofre de Perote; Cuesta de Misantla; Sochiapa; Pasa Nueva), Puebla (Metlatoyuca), Mexico (near City of Mexico), Oaxaca (Santa Efigénia), Tabasco (Teapa), Campeche (Apazote), and Yucatan (La Vega; Izalám; Chichen-Itza), and southward through Guatemala (Chiséc; Choctúm; Savana Grande; Pie de la Cuesta in San Marcos; Naranjo; Patulúl, Sololá; Mazatenango; Los Amates, Yzabál), British Honduras (Orange Walk; forest near Manatee Lagoon; Ycacos Lagoon; forest near Quamius Creek), Honduras (Santa Ana), and Nicaragua (Sucuyá) to Costa Rica<sup>c</sup> (Naranjo de Cartago; Monte Redondo; La Cedrá, Aserri; Coralillo; Bonilla; Guayabo; Mojica; Dota; Santa Maria de Dota; Cerro Santa Maria; Tenório; Bolsón; Volcán de Miravalles).

*Sittasomus sylvioides* LAFRESNAYE, Rev. et Mag. Zool., 1850, 590 (Mexico).—

REICHENBACH, Handb. Spec. Orn., 1853, 177.—SCLATER, Proc. Zool. Soc.

Lond., 1856, 290 (Córdova, Vera Cruz); 1859, 365 (Jalapa, Vera Cruz); 1864,

175 (near City of Mexico); Cat. Am. Birds, 1862, 160 (do.).—SALVIN, Ibis,

<sup>a</sup> Twenty-three specimens.

<sup>a</sup> Twenty-two specimens.

| Locality.                                                             | Wing. | Tail. | Culmen. | Tarsus. | Middle toe. |
|-----------------------------------------------------------------------|-------|-------|---------|---------|-------------|
| MALES.                                                                |       |       |         |         |             |
| Four adult males from Vera Cruz (3) and Puebla (1).....               | 77.5  | 76    | 13.6    | 16.9    | 11.9        |
| Two adult males from Guatemala.....                                   | 75.5  | 71    | 14.5    | 16      | 11.5        |
| One adult male (?) from British Honduras.....                         | 65.5  | 65.5  | 14      | 16      | 12          |
| One adult male from Honduras.....                                     | 76.5  | 72.5  | 13.5    | 17.5    | 12.5        |
| Four adult males from Yucatan.....                                    | 74.4  | 73    | 14      | 16.5    | 11.6        |
| One adult male from Nicaragua.....                                    | 77.5  | 73    | 15      | 17      | 11.5        |
| Ten adult males from Costa Rica.....                                  | 78.9  | 74    | 14.4    | 17.2    | 12.5        |
| Six adult males ( <i>S. s. levis</i> ) from western Panamá.....       | 84    | 77.4  | 15.4    | 17.7    | 13          |
| One adult male ( <i>S. s. jaliscensis</i> ) from Jalisco, Mexico..... | 84    | 81    | 16.5    | 18.5    | 12          |
| FEMALES.                                                              |       |       |         |         |             |
| Three adult females from Puebla.....                                  | 70.7  | 68.8  | 13.7    | 16.2    | 11.3        |
| Two adult females from Campeche.....                                  | 67.2  | 66.2  | 13.5    | 15      | 11          |
| Two adult females from Yucatan.....                                   | 67.7  | 65.7  | 13.5    | 15.5    | 10.7        |
| One adult female from Guatemala.....                                  | 71    | 66.5  | 14.5    | 16.5    | 12.5        |
| Four adult females from British Honduras.....                         | 67.2  | 64.1  | 14      | 16.1    | 11.6        |
| Ten adult females ( <i>S. s. levis</i> ) from Costa Rica.....         | 73.6  | 68.4  | 14      | 16.7    | 12.2        |
| Three adult females ( <i>S. s. levis</i> ) from Panamá.....           | 76    | 73.5  | 14.7    | 17.3    | 12.7        |

<sup>c</sup>Costa Rican examples are intermediate between *S. s. sylvioides* and *S. s. levis*, agreeing best with the former in measurements and with the latter in coloration. In fact, they may be as well referred to one form as to the other.

- 1861, 353 (Chiséc, Guatemala).—LAWRENCE, Ann. Lyc. N. Y., ix, 1868, 106 (Dota Mts., Costa Rica).—FRANTZIUS, Journ. für Orn., 1869, 304 (Costa Rica).—SUMICHRAST, Mem. Bost. Soc. N. H., i, 1869, 555 (tierra caliente of Vera Cruz).—SANCHEZ, An. Mus. Nac. Mex., i, 1877, 97 (Vera Cruz).—ZELEDÓN, Anal. Mus. Nac. Costa Rica, i, 1888, 113 (Dota and Monte Redondo, Costa Rica).—RIDGWAY, Proc. U. S. Nat. Mus., xiv, 1891, 509 (crit.).—COLE, Bull. Mus. Comp. Zool., 1, 1906, 131 (Chichen-Itza, Yucatan; crit.).—DEARBORN, Pub. 125, Field Mus. N. H., 1907, 108 (Los Amates and Patulúl, Guatemala).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 651 (Costa Rican range).
- [*Sittasomus*] *sylyioides* LAFRESNAYE, Rev. et Mag. Zool., 1849, 331 (*nomen nudum*).—GRAY, Hand-list, i, 1869, 180, no. 2466.—SHARPE, Hand-list, iii, 1901, 77, part.
- Sittasomus pectinicaudus* Caban[is] REICHENBACH, Handb. Spec. Orn., 1853, 177.
- [*Sittasomus*] *pectinicaudus* CABANIS and HEINE, Mus. Hein., ii, Aug., 1859, 33 (Mexico; coll. Heine).
- [*Sittasomus*] *pectinicaudus* HEINE and REICHENOW, Nom. Mus. Hein. Orn., 1890, 135 (Mexico).
- Sittasomus olivaceus* (not of Maximilian) SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1869, 363 (near City of Mexico).—SUMICHRAST, La Naturaleza, v, 1881, 247 (Potrero, Vera Cruz).—NUTTING, Proc. U. S. Nat. Mus., vi, 1883, 385 (Sucuyá, Nicaragua).—BOUCARD, Proc. Zool. Soc. Lond., 1883, 450 (Yucatan).—FERRARI-PEREZ, Proc. U. S. Nat. Mus., ix, 1886, 156 (Jalapa, Vera Cruz).—UNDERWOOD, Ibis, 1896, 440 (Volcán de Miravalles, Costa Rica).
- [*Sittasomus*] *olivaceus* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 66, part.
- Sittasomus olivaceus* SCLATER, Cat. Birds Brit. Mus., xv, 1890, 119, part (Jalapa; n. Yucatan; Savana Grande and Choctúm, Guatemala; Tempate, Costa Rica).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1891, 176, part (Coátepec, Coñre de Perote, Cuesta de Misantla, and Córdoba, Vera Cruz; Sochiapa; Teapa, Tabasco; Sta. Efigénia, Oaxaca; Orange Walk, Brit. Honduras; Pié de la Cuesta in San Marcos, Choctúm, and Savana Grande, Guatemala; Sucuyá, Nicaragua; Tempate de Nicoya and Dota Mts., Costa Rica).

### SITTASOMUS SYLVIODES LEVIS (Bangs).

#### PANAMA SITTASOMUS.

Similar to *S. s. sylvioides*, but larger and with cinnamon-rufous color of rump and under tail-coverts lighter.

*Adult male*.—Length (skins), 156–165 (160); wing, 81.5–86 (84); tail, 75–81.5 (77.4); culmen, 15–16 (15.4); tarsus, 17–18 (17.7); middle toe, 12.5–13.5 (13).<sup>a</sup>

*Adult female*.—Length (skins), 147–158 (152); wing, 73.5–83 (76.8); tail, 68–82.5 (73.5); culmen, 14–15.5 (14.7); tarsus, 17–17.5 (17.3); middle toe, 12.5–13 (12.7).<sup>b</sup>

Panamá (Calovévora; Chitra; Volcán de Chiriquí; Boquete, 4,000 feet; Cascajal, Coelé).

*Sittasomus olivaceus* (not of Maximilian) SALVIN, Proc. Zool. Soc. Lond., 1870, 192 (Calovévora and Volcán de Chiriquí, Panamá).

[*Sittasomus*] *olivaceus* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 66, part.

*Sittasomus olivaceus* SCLATER, Cat. Birds Brit. Mus., xv, 1890, 119, part (Calovévora, Chitra, and Volcán de Chiriquí, Panamá).—SALVIN and GODMAN, Biol.

<sup>a</sup> Six specimens.

<sup>b</sup> Three specimens.



Centr.-Am., Aves, ii, 1891, 176, part (Chiriquí, Chitra, and Calovévora, Panamá).

[*Sittasomus*] *sylvioides* SHARPE, Hand-list, iii, 1901, 77, part (Panamá).

*Sittasomus levis* BANGS, Proc. New Engl. Zool. Club, iii, Jan. 30, 1902, 46 (Boquete, Chiriquí, Panama, alt. 4,000 ft.; coll. E. A. and O. Bangs).

### SITTASOMUS SYLVIODES JALISCENSIS Nelson.

#### JALISCO SITTASOMUS.

Similar to *S. s. sylvioides* but much larger, and color of under parts slightly darker.

*Adult male*.—Length (skin), 167; wing, 84; tail, 81; culmen, 16.5; tarsus, 18.5; middle toe, 12.<sup>a</sup>

Southwestern Mexico, in State of Jalisco (San Sebastián).

*Sittasomus sylvioides* (not of Lafresnaye) NELSON, Auk, xv, 1898, 156 (San Sebastián, Jalisco).

*Sittasomus sylvioides jaliscensis* NELSON, Auk, xvii, July, 1900, 264 (San Sebastián, n. w. Jalisco; coll. U. S. Nat. Mus.).

[*Sittasomus*] *jalcensis* SHARPE, Hand-list, iii, 1901, 77.

### Genus DECONYCHURA Cherrie.

*Deconychura b* CHERRIE, Proc. U. S. Nat. Mus., xiv, no. 855, Sept. 4, 1891, 338. (Type, *D. typica* Cherrie.)

Medium sized or rather small Dendrocolaptidæ (length about 170 mm.) with narrow operculate nostrils, tail equal to or longer than wing, graduated for about half its length, with the very rigid shafts of rectrices strongly decurved subterminally, and with culmen (from base) longer than tarsus, and inner webs of remiges without any buffy or ochraceous cross-band.

Bill nearly as long as head, straight, rather stout, broad and depressed basally, its width at latero-frontal antiæ much greater than its depth at same point and equal to a little less than half the distance from nostril to tip of maxilla; culmen distinctly ridged, straight for basal half or more, gradually but decidedly decurved terminally; tomia slightly but distinctly decurved terminally, without trace of notch; gonys faintly convex basally, straight or even very faintly concave distally. Nostril exposed, posteriorly in contact with latero-frontal feathering, narrowly ovate or elliptical, longitudinal, margined above by a rather narrow membranous operculum. Rictal bristles obvious but very small, and feathers of chin and lores with minute terminal setæ. Wing rather long and pointed, with longest primaries exceeding secondaries by less than length of exposed culmen; eighth primary longest, the seventh and sixth, successively, but little shorter, the tenth (outermost) nearly three-fourths as long as the longest, the ninth shorter than sixth. Tail equal to or slightly longer than wing, graduated for

<sup>a</sup> One specimen (the type).

<sup>b</sup> Derived from *δέκα* ten, *ὄνυξ* claw, and *οὐρά* tail.

about half its length, the rectrices (12<sup>a</sup>) abruptly and conspicuously acuminate, with their very rigid shafts twisted and strongly decurved subterminally. Tarsus about as long as exposed culmen, less than one-fourth as long as wing, slender, distinctly scutellate (endaspidean); middle toe, with claw, shorter than tarsus; outer toe, with or without claw, equal to or very slightly longer than middle toe; inner toe, without claw, reaching to a little beyond subterminal articulation of middle toe; hallux much shorter than inner toe, not stouter; middle toe united to outer toe by whole of its first and about half of its second phalanx, to inner toe by greater part of its first phalanx; anterior claws rather large, very strongly curved and acute, that of the hallux slightly curved, as long as or longer than the digit.

*Coloration*.—Tail-coverts, tail, and remiges chestnut or rufous-chestnut; pileum and back olive-brown, the former with narrow indistinct streaks of paler; beneath light olive-brown, throat brownish buff or clay color, the chest sometimes spotted with the same.

*Nidification*.—Nests in holes; eggs glossy white.

*Range*.—Costa Rica to British Guiana and upper Amazon Valley. (Four species.<sup>b</sup>)

This genus is distinctly intermediate between *Sittasomus* and *Dendrocincla*, and I quite agree with Hellmayr that it is more nearly related to the latter than to the former; but I can not believe that it is "perhaps barely separable" from *Dendrocincla* (see Hellmayr, Bull. Brit. Orn. Club, xiv, 1904, 52), the difference in the character of the tips of the rectrices (in which character *Deconychura* is precisely like *Glyphorhynchus* and *Sittasomus* and very unlike *Dendrocincla*), even apart from the difference in the form of the bill, being, in my opinion, quite sufficient to justify generic separation. I have not, however, seen *Dendrocincla longicauda* Pelzeln, which Hellmayr refers to *Deconychura*, and which may possibly bridge the gap apparently separating the two genera as understood by me.

#### KEY TO THE SPECIES OF DECONYCHURA.<sup>c</sup>

- a. Rump brown like back (only the upper tail-coverts chestnut-rufous); bend of wing washed with cinnamon-rufous.
- b. Smaller (wing 95–102 in male, 86–90 in female; bill, from rictus, 24–25.5); breast spotted or streaked with buff. (Southwestern Costa Rica and Panamá.)  
*Deconychura typica* (p. 285).
- bb. Larger (wing 107–111 in male, 102 in female; bill, from rictus, 27–29 in male, 25 in female); breast plain, like abdomen. (British Guiana to Rio Negro and Rio Madeira.).....*Deconychura longicauda* (extralimital).<sup>d</sup>

<sup>a</sup> Hellmayr was the first to call attention to the fact that this genus possesses twelve rectrices, not ten, as stated by its describer. (See Bull. Brit. Orn. Club, xiv, 1904, 52.)

<sup>b</sup> According to Hellmayr (Novit. Zool., xiv, 1907, 368). I have, however, seen only *D. typica*, from which alone the above diagnosis and description are taken.

<sup>c</sup> Adapted from Hellmayr, Novit. Zool., xiv, 1907, 368.

<sup>d</sup> *Dendrocincla longicauda* Pelzeln, Orn. Bras., i Abth., 1868, 42, 60 (Borba; Marahitanas; Barra do Rio Negro); Selater, Cat. Birds Brit. Mus., xv, 1890, 165.—*Deconychura longicauda* Hellmayr, Novit. Zool., xiv, no. 2, Nov., 1907, 367 (crit.).

aa. Rump chestnut-rufous; bend of wing olive-brown.

b. Larger (wing of female 84.5, tail, 90, bill, from rictus, 20). (Eastern Ecuador.)

*Deconychura secunda* (extralimital).<sup>a</sup>

bb. Smaller (wing of female 75, tail 72, bill, from rictus, 16). (Rio Madeira, north-western Brazil to eastern Peru.)...*Deconychura stictolaema* (extralimital).<sup>b</sup>

### DECONYCHURA TYPICA Cherrie.

#### CHERRIE'S DECONYCHURA.

*Adults (sexes alike).*—Pileum olive or brownish olive, indistinctly streaked with darker, and with indistinct narrow shaft-streaks of buffy (at least on forehead); back, scapulars, rump, and wing-coverts plain olive-brown or raw-umber, passing into chestnut on upper tail-coverts, tail, secondaries, and outer webs of proximal (inner) primaries, the outer webs of distal primaries lighter and less rufescent brown; shafts of rectrices dark chestnut, those of remiges black, or nearly so; a narrow superciliary stripe of buff; auricular and submalar regions streaked with dull buff and dusky, the latter predominating on upper portion of auricular region, forming an indistinct postocular streak; malar region, chin, and throat dull buff, the first indistinctly streaked with dusky; feathers of chest dark olive or dusky marked with a large central, more or less guttate spot of buff; rest of under parts light olive-brown or buffy grayish brown (nearest isabella color), the breast (sometimes abdomen and under tail-coverts also) more or less distinctly streaked with buff; under wing-coverts clear ochraceous-buff; inner webs of remiges deep cinnamon-rufous passing into buffy on edge, the terminal portion, abruptly, dusky; maxilla dusky horn color or blackish, paler along tomia; mandible dull whitish or pale yellowish (plumbeous in life);<sup>c</sup> iris brown;<sup>c</sup> legs and feet dusky (plumbeous in life).<sup>c</sup>

*Adult male.*—Length (skins), 183–194 (188); wing, 94–102 (97.2); tail, 89.5–96 (93.9); culmen, 19.5–23 (22.1); tarsus, 20.5–22 (21.1); middle toe, 13.5–15 (14.3).<sup>d</sup>

*Adult female.*—Length (skins), 174–180 (176); wing, 86–90 (88); tail, 83.5–88 (86.5); culmen, 20–21.5 (20.6); tarsus, 19–20 (19.6); middle toe, 13–13.5 (13.2).<sup>e</sup>

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<sup>a</sup> *Deconychura secunda* Hellmayr, Bull. Brit. Orn. Club, xiv, no. civ, Feb. 27, 1904, 51 (Rio Coca, upper Rio Napo, e. Ecuador; coll. Tring Mus.).—*D[econychura] secunda* Hellmayr, Novit. Zool., xiv, 1907, 368 (diagnosis).

<sup>b</sup> *Sittasomus stictolaemus* Pelzeln, Orn. Bras., i, Abth., 1868, 42, 59 (Borba, Rio Madeira, w. Brazil; coll. Vienna Mus.).—*Sittosomus stictolaemus* Sclater, Cat. Birds Brit. Mus., xv, 1890, 120.—*D[econychura] stictolaemus* Hellmayr, Novit. Zool., xiv, no. 2, Nov., 1907, 368 (Borba, Brazil; diagnosis).

<sup>c</sup> Zeledón, manuscript.

<sup>d</sup> Six specimens.

<sup>e</sup> Four specimens.



Southwestern Costa Rica (Pozo Azul de Pirrís; Pozo del Pitál, Rio Naranjo; El Pozo de Térraba; Tuís; Palmár; El General) and Panamá (Lion Hill; Divala, Chiriquí).

*Deconychura typica* CHERRIE, Proc. U. S. Nat. Mus., xiv, no. 855, Sept. 4, 1891, 339 (Pozo Azul de Pirrís, s. w. Costa Rica; coll. U. S. Nat. Mus.); Expl. Zool. Merid. Costa Rica, 1893, 39 (Palmár, s. w. Costa Rica); Anal. Inst. Fis.-Geog. Costa Rica, vi, 1893, 17 (Pozo del Pitál, s. w. Costa Rica; descr. nest and eggs).—BANGS, Auk, xviii, 1901, 367 (Divala, Chiriquí, Panamá).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 652 (s. w. Costa Rica, up to 1,000 ft.). [*Deconychura*] *typica* SHARPE, Hand-list, iii, 1901, 77 (Costa Rica; Panamá). *D[econychura] typica* HELLMAYR, Novit. Zool., xiv, 1907, 368 (Chiriquí; Pozo Azul, Costa Rica; diagnosis).

### Genus DENDROCINCLA Gray.

*Dryocopus* (not of Boie, 1826) MAXIMILIAN, Beitr. Naturg. Bras., iii, pt. ii, 1831, 1111. (Type, *Dendrocolaptes turdinus* Lichtenstein.)

*Dendrocinclá* GRAY, List Gen. Birds, 1840, 23. (Type, *Dendrocolaptes turdinus* Lichtenstein.)

*Dendromanes* SCLATER, Proc. Zool. Soc. Lond., 1859, 382. (Type, *Dendrocinclá anabatina* Sclater.)

Medium-sized to rather large Dendrocolaptidæ (length about 175–235 mm.), with narrow, conspicuously operculate nostril, bill as long as or longer than head, with distinctly recurved (almost uncinatè) tip, and with tail shorter than wing, graduated for about one-third its length, the tips of rectrices inconspicuously acuminate and with the nearly denuded projecting tips of the very rigid shafts but slightly decurved.

Bill about as long as, sometimes slightly shorter than, head, rather stout, nearly straight (but distinctly decurved, almost uncinatè, at tip), its width at latero-frontal antiæ equal to or greater than its depth at same point, and contained from less than two and a half to a little more than three times in the distance from nostril to tip of maxilla; culmen more or less distinctly ridged, straight for most of its length, rather abruptly decurved terminally, the tip of maxilla almost uncinatè; maxillary tomium straight for the most part, rather strongly concave (decurved) terminally, without trace of notch; gonys more or less strongly convex and prominent basally, straight and ascending terminally, the extreme tip sometimes slightly decurved. Nostril exposed, posteriorly in contact with feathering of latero-frontal antiæ, narrow (slit-like), longitudinal, overhung by a broad membranous operculum, this sometimes partly covered by feathers of the latero-frontal antiæ. Rictal bristles present but very small, and feathers of chin and lores with fine terminal setæ. Wing moderate to rather long, rather pointed, the longest primaries exceeding secondaries by from less the distance from nostril to tip of maxilla to nearly length of exposed culmen; sixth, seventh, and eighth, or sixth and seventh, primaries longest, the tenth (outermost) a little more

than two-thirds (*D. tyrannina*) to nearly four-fifths (*D. homochroa*) as long as the longest, the ninth equal to or shorter than fifth. Tail a little more than two-thirds (*D. homochroa*) to more than five-sixths (*D. tyrannina*) as long as wing, graduated for less than to considerably more than two-thirds its length, the rectrices (12) rather broad, rounded terminally, but with the very rigid shafts nearly denuded at tip, and forming projecting, more or less (sometimes rather strongly) decurved points. Tarsus shorter than exposed culmen to slightly longer, about one-fourth as long as wing (only one-fifth as long in *D. tyrannina*) rather slender (stouter in *D. homochroa*), distinctly scutellate (endaspidean); middle toe, with claw, shorter than tarsus (except in *D. tyrannina*); outer toe (with or without claw) as long as middle toe, or very slightly shorter; inner toe, without claw, reaching to subterminal articulation of middle toe; hallux decidedly shorter than inner toe, scarcely, if at all, stouter; middle toe united to outer toe for whole of its first and part of its second phalanx, to inner toe for about half its first phalanx; anterior claws large, very strongly curved and acute, that of hallux less strongly curved, about as long as the digit.

*Coloration*.—Tail-coverts, tail, and secondaries chestnut or rufous-chestnut; rest of upper parts brown (nearly olive to tawny-brown or russet), the pileum sometimes narrowly and indistinctly streaked with paler; under parts lighter brown or olive-brown, sometimes paler and grayer, or even dull whitish, on chin and upper throat, the chest or foreneck sometimes narrowly streaked with paler. One species wholly rufous-chestnut, duller on back and under parts. Sexes alike.

*Range*.—Southern Mexico to Cayenne, southeastern Brazil, Bolivia, and Ecuador. (About sixteen species.<sup>a</sup>)

#### KEY TO THE SPECIES AND SUBSPECIES OF DENDROCIINCLA.

- a. Secondaries mostly tawny or tawny-ochraceous, contrasting strongly with their dusky tips and the umber brown of wing-coverts. (*Dendrocincla anabatina*.)
  - b. Nape suffused with tawny; rump lighter, or more tawny, brown; secondaries clearer tawny or tawny-ochraceous.
    - c. Darker and browner. (Southeastern Mexico, except Campeche and Yucatan, to eastern Nicaragua).....*Dendrocincla anabatina anabatina* (p. 288).
    - cc. Lighter and more buffy. (Campeche and Yucatan.)
      - Dendrocincla anabatina typhla* (p. 290).
  - bb. Nape not suffused with tawny; rump darker brown; secondaries darker and duller tawny. (Southwestern Costa Rica and western Panamá.)
    - Dendrocincla anabatina saturata* (p. 290).
- aa. Secondaries brown or rufescent (not tawny or tawny-ochraceous), concolor with wing-coverts, or at least not contrasting strongly with them.
  - b. Wing-coverts brown (not rufescent); throat dull light buffy grayish; pileum dull olive-brown. (*Dendrocincla lafresnaye*.)

<sup>a</sup> The following have not been examined in this connection: *D. macrorhyncha* Salvadori and Festa, *D. fuliginosa* (Vieillot), and *D. minor* Pelzeln.

c. Coloration lighter. (Colombia to eastern Ecuador.)

*Dendrocincla lafresnayei lafresnayei* (extralimital).<sup>a</sup>

cc. Coloration darker. (Eastern Panamá to southeastern Honduras.)

*Dendrocincla lafresnayei ridgwayi* (p. 291).

bb. Wing-coverts deep cinnamon-rufous or chestnut, like remiges; throat clear tawny-brown or dull tawny; pileum rufous-brown to rufous-chestnut. (*Dendrocincla homochroa*.)

c. General color more rufescent, the pileum rufous-chestnut, back and under parts nearly chestnut or tawny-chestnut. (Southern Mexico to Guatemala and British Honduras).....*Dendrocincla homochroa homochroa* (p. 293).

cc. General color less rufescent, the pileum dull tawny-chestnut or burnt umber, back and under parts nearly mummy brown.

d. Back and under parts deeper in color and more rufescent; slightly larger (male averaging: Wing, 104.7; tail, 78). (Southwestern Nicaragua to western Panamá).....*Dendrocincla homochroa acedesta* (p. 294).

dd. Back and under parts lighter, more olivaceous; slightly smaller (male averaging: Wing, 101.7; tail, 73.4). (Panamá.)

*Dendrocincla homochroa ruficeps* (p. 295).

### DENDROCINCLA ANABATINA ANABATINA Sclater.

#### NORTHERN DENDROCINCLA.

*Adults (sexes alike).*—Pileum and hindneck sepia brown to nearly raw-umber, the feathers usually with very narrow and indistinct shaft-streaks of paler, those of the occiput and nape usually paler and more cinnamonaceous centrally (sometimes conspicuously so); back, scapulars, and wing-coverts plain deep raw-umber (sometimes nearly mummy) brown, the rump lighter and more rufescent, passing into cinnamon-rufous on upper tail-coverts; tail deep cinnamon-rufous or rufous-chestnut, the shafts of rectrices darker; remiges dull tawny, or russet-tawny (the outer primaries with outer webs more brownish or isabella color), with terminal portion (broadly and on inner web abruptly) dusky; a more or less distinct but broken supra-auricular streak of pale tawny or buffy; auricular and sub-orbital regions sooty brown or sepia, with narrow shaft-streaks of paler, the malar region similar but speckled or flecked instead of streaked; lores dull grayish buffy, with bristly tips of feathers dusky; chin and throat buff, the lower throat more or less intermixed or barred with light brownish; rest of under parts light raw-umber brown, paler and more buffy or cinnamonaceous on abdomen, slightly darker and more olivaceous on chest, where the feathers have narrow, usually indistinct, shaft-streaks of buff; under tail-coverts dull cinnamon-rufous; axillars and under wing-coverts tawny-ochraceous, the greater part of inner webs of remiges similar but slightly paler;

<sup>a</sup> *Dendrocincla lafresnayei* Ridgway, Proc. U. S. Nat. Mus., x, Jan. 6, 1888, 492 ("Upper Amazon?"; coll. Bost. Soc. Nat. Hist.); Oberholser, Proc. Ac. Nat. Sci. Phila., 1904, 457 (monogr.).—*Dendrocincla olivacea anguina* Bangs, Proc. Biol. Soc. Wash., xii, June 3, 1898, 138 (Santa Marta, Colombia, 5,000 ft.; coll. E. A. and O. Bangs).



maxilla deep horn color to nearly black; mandible pale horn color or dull pale yellowish or whitish (in dried skins), usually with a stripe (more or less distinct) of horn color along tomium; iris brown; legs and feet horn color (in dried skins).

*Adult male*.—Length (skins), 176–191 (184); wing, 95–100 (98.5); tail, 68–78 (73.7); culmen, 22.5–24.5 (23.8); tarsus, 23–24 (23.6); middle toe, 16–17 (16.5).<sup>a</sup>

*Adult female*.—166–193 (179); wing, 89–100.5 (94.1); tail, 63.5–81 (70.8); culmen, 21–25 (23.2); tarsus, 22–24 (23.4); middle toe, 15–16 (15.7).<sup>b</sup>

Southeastern Mexico, in States of Vera Cruz (Playa Vicente; Miradór; Potrero, near Córdoba; Buena Vista), Oaxaca, and Tabasco (Teapa), and southward through Guatemala (Cobán; Choctúm; Cajabón-Peten road; Rancho Tuilhá; Samayoa; Los Amates, Yzabál), British Honduras (Orange Walk; Toledo District; near Manatee Lagoon) and Honduras (Omoa; San Pedro; Santa Ana; Rio Segóvia; La Puerta) to Nicaragua (Los Sábalos; Rio Escondido).

*Dendrocicla anabatina* SCLATER, Proc. Zool. Soc. Lond., 1859, 54, pl. 150 (Omoa, Honduras; coll. Derby Mus.); Cat. Birds Brit. Mus., xv, 1890, 162 (Oaxaca; San Pedro, Honduras; Choctúm, Samayoa, etc., Vera Paz, Guatemala).—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1868, 54 (Mexico; Guatemala).—BOUCARD, Ann. Soc. Linn. Lyon, 1878, 38 (Guatemala).—NUTTING, Proc. U. S. Nat. Mus., vi, 1883, 404 (Los Sábalos, Nicaragua).—RIDGWAY, Proc. U. S. Nat. Mus., x, 1888, 490 (syn.; crit.), 590 (Segóvia R., Honduras).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1891, 172, part (Miradór,

<sup>a</sup> Eight specimens.<sup>b</sup> Fourteen specimens.

| Locality.                                                                        | Wing. | Tail. | Culmen. | Tarsus. | Middle toe. |
|----------------------------------------------------------------------------------|-------|-------|---------|---------|-------------|
| MALES.                                                                           |       |       |         |         |             |
| One adult male from Guatemala.....                                               | 100   | 75    | 24      | 23      | 16.5        |
| Five adult males from British Honduras.....                                      | 98.1  | 73.6  | 23.9    | 23.8    | 16.5        |
| One adult male from Honduras.....                                                | 97.5  | 71    | 22.5    | 23.5    | 16.5        |
| One adult male from Nicaragua.....                                               | 100   | 74    | 24.5    | 23.5    | 16.5        |
| Ten adult males ( <i>D. a. saturata</i> ) from Costa Rica.....                   | 100.7 | 76.6  | 24.1    | 23.9    | 16.7        |
| Three adult males ( <i>D. a. saturata</i> ) from western Panamá.....             | 96.8  | 69.8  | 25      | 24      | 16.8        |
| Three adult males ( <i>D. a. typhla</i> ) from Yucatan (2) and Campeche (1)..... | 99.2  | 73.8  | 23      | 23.8    | 16.5        |
| FEMALES.                                                                         |       |       |         |         |             |
| One adult female from Vera Cruz.....                                             | 92.5  | 68.5  | 23      | 22.5    | 16          |
| Two adult females from Tabasco.....                                              | 95.5  | 67.5  | 23      | 22.7    | 15.7        |
| One adult female from Guatemala.....                                             | 92    | 68    | 23      | 22.5    | 15.5        |
| Six adult females from British Honduras.....                                     | 95.7  | 73.6  | 23.2    | 23      | 15.6        |
| Two adult females from Honduras.....                                             | 90.5  | 65.5  | 23      | 22.5    | 15          |
| Ten adult females ( <i>D. a. saturata</i> ) from Costa Rica.....                 | 96.6  | 71.8  | 23.5    | 23.2    | 16          |
| One adult female ( <i>D. a. saturata</i> ) from western Panamá.....              | 102   | 80    | 24.5    | 23.5    | 16.5        |
| One adult female ( <i>D. a. typhla</i> ) from Campeche.....                      | 95.5  | 71.5  | 23      | 23      | 16.5        |

Potrero, and Playa Vicente, Vera Cruz; Teapa, Tabasco; Orange Walk, Brit. Honduras; Rancho Tuilhá, Cajabón-Petén road, Choctúm, and Cobán, Guatemala; Omoa, San Pedro, and Segovia R., Honduras; Los Sábalos, Nicaragua).—RICHMOND, Proc. U. S. Nat. Mus., xvi, 1893, 498 (Rio Escondido, Nicaragua; habits; notes).—DEARBORN, Pub. 125, Field Mus. N. H., 1907, 108 (Los Amates, e. Guatemala).

*D[endrocinclá] anabatina* SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1868, 54.

[*Dendrocinclá*] *anabatina* GRAY, Hand-list, i, 1869, 180, no. 2459.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 67, part.—SHARPE, Hand-list, iii, 1901, 74, part.

*Dendrocinclá anabatina anabatina* OBERHOLSER, Proc. Acad. Nat. Sci. Phila., April, 1904, 452 (monogr.).

*Dendromanes anabatinus* SCLATER, Proc. Zool. Soc. Lond., 1859, 382 (Playa Vicente, Vera Cruz; crit.); Cat. Am. Birds, 1862, 161 (Oaxaca).—SALVIN and SCLATER, Ibis, 1860, 35 (Cobán, Guatemala); Proc. Zool. Soc. Lond., 1870, 837 (San Pedro, Honduras).

*Dendrocops anabatinus* SCLATER and SALVIN, Ibis, 1859, 118 (Omoa).

### DENDROCINCLA ANABATINA TYPHLA Oberholser.

#### YUCATAN DENDROCINCLA.

Similar to *D. a. anabatina* but slightly paler, especially the under parts.

*Adult male*.—Length (skins), 190–193 (192); wing, 95.5–103.5 (99.2); tail, 70–78 (73.8); culmen, 22–24 (23); tarsus, 23.5–24 (23.8); middle toe, 15.5–17 (16.5).<sup>a</sup>

*Adult female*.—Length (skin), 179; wing, 95.5; tail, 71.5; culmen, 23; tarsus, 23; middle toe, 16.5.<sup>b</sup>

Yucatan (Puerto Morelos; Calotmúl; Chichen-Itza) and Campeche (Apazote; Canasayát).

*Dendrocinclá anabatina* (not of Sclater) BOUCARD, Proc. Zool. Soc. Lond., 1883, 450 (Yucatan).—SCLATER, Cat. Birds Brit. Mus., xv, 1890, 162, part (n. Yucatan).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1891, 172, part (n. Yucatan).—CHAPMAN, Bull. Am. Mus. N. H., viii, 1896, 284 (Chichen-Itza, Yucatan).

*Dendrocinclá anabatina typhla* OBERHOLSER, Proc. Acad. Nat. Sci. Phila., April, 1904, 452 (Puerto Morelos, Yucatan; coll. U. S. Nat. Mus.).—COLE, Bull. Mus. Comp. Zool., i, 1906, 131 (Chichen-Itza, Yucatan).

### DENDROCINCLA ANABATINA SATURATA Carriker.

#### CARRIKER'S DENDROCINCLA.

Similar to *D. a. anabatina* but general coloration (except remiges and rectrices) darker and more olivaceous brown.

*Adult male*.—Length (skins), 175–193 (181); wing, 95–105 (99.8); tail, 68–80 (75.1); culmen, 22–25.5 (24.2); tarsus, 23–25 (23.9); middle toe, 15.5–17 (16.8).<sup>c</sup>

<sup>a</sup> Three specimens (one from Campeche).

<sup>b</sup> One specimen, from Campeche.

<sup>c</sup> Thirteen specimens.

*Adult female*.—Length (skins), 162–186 (175); wing, 92.5–102 (97.1); tail, 63.5–80 (72.6); culmen, 21–25 (23.5); tarsus, 22–24 (23.2); middle toe, 15–17 (16).<sup>a</sup>

Southwestern Costa Rica (Pozo Azul de Pirrís; Pozo del Rio Grande; El Pozo de Térraba; Térraba; Paso Real; Boruca; Buenos Aires; Palmár; El General; Pigres) and western Panamá (Divala; Bugaba; Chiriquí).

*Dendromanes anabatinus* (not *Dendrocinclá anabatina* Sclater) SALVIN, Proc. Zool. Soc. Lond., 1870, 192 (Bugaba, Verágua, Panamá).

*Dendrocinclá anabatina* (not of Sclater, 1859) SCLATER, Cat. Birds Brit. Mus., xv, 1890, 162, part (Bugaba, Panamá).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1891, 172, part (Bugaba, Panamá).—CHERRIE, Expl. Zool. Merid. Costa Rica, 1893, 39 (Palmár, Boruca, and Térraba, s. w. Costa Rica).

[*Dendrocinclá*] *anabatina* SHARPE, Hand-list, iii, 1901, 74, part (Panama).

*Dendrocinclá anabatina saturata* CARRIKER, Ann. Carnegie Mus., vi, 1910, 649 (El Pozo de Térraba, s. w. Costa Rica; coll. Carnegie Mus.; habits).

### DENDROCINCLA LAFRESNAYEI RIDGWAYI (Oberholser).

#### BROWN DENDROCINCLA.

*Adults (sexes alike)*.—Above plain brown (between raw-umber and mummy to nearly russet-brown), duller (grayer or more olive) on pileum, passing into deep cinnamon-rufous or rufous-chestnut on upper tail-coverts and tail, the latter with shafts of rectrices darker chestnut; wing-coverts usually concolor with back, or very nearly so, sometimes a little more rufescent; remiges decidedly more rufescent, especially on proximal primaries which are dull cinnamon-rufous; six or seven outer primaries with terminal portion grayish brown or dusky (abruptly so on inner web); supra-auricular region narrowly streaked with buffy; loreal region pale grayish brown or buffy grayish, with indistinct shaft-streaks of paler; auricular and suborbital regions dull olive or dusky, narrowly streaked with buff; malar region nearly uniform dull olive; chin and upper throat pale brownish buffy, usually indistinctly barred or flecked with dusky or dull grayish, the lower throat more brownish, with narrow shaft-

<sup>a</sup> Eleven specimens.

| Locality.                                  | Wing. | Tail. | Culmen. | Tarsus. | Middle toe. |
|--------------------------------------------|-------|-------|---------|---------|-------------|
| MALES.                                     |       |       |         |         |             |
| Ten adult males from Costa Rica.....       | 100.7 | 76.6  | 24.1    | 23.9    | 16.7        |
| Three adult males from western Panamá..... | 96.8  | 69.8  | 25      | 24      | 16.8        |
| FEMALES.                                   |       |       |         |         |             |
| Ten adult females from Costa Rica.....     | 96.6  | 71.8  | 23.5    | 23.2    | 16          |
| One adult female from western Panamá.....  | 102   | 80    | 24.5    | 23.5    | 16.5        |



streaks of pale buffy; rest of under parts plain light olive-brown (nearly raw-umber) to nearly cinnamon-brown, usually slightly more cinnamomeous posteriorly, where passing into dull cinnamon-rufous on longer under tail-coverts; under wing-coverts clear light ochraceous or ochraceous-buff; inner webs of remiges tawny-rufous or rufous-tawny, passing into ochraceous-buff on edges, the outer six or seven more or less extensively grayish brown or dusky terminally; bill dusky brown to brownish black, the under portion of mandible (broadly) whitish or pale dull yellowish (in dried skins); legs and feet horn brown or dusky (in dried skins).

*Adult male*.—Length (skins), 191–222 (209); wing, 110–116 (113.2); tail, 87–94 (90.3); culmen, 28–30.5 (29.2); tarsus, 24–25.5 (25.1); middle toe, 17–18.5 (17.8).<sup>a</sup>

*Adult female*.—Length (skins), 188–208 (199); wing, 100.5–109.5 (105.6); tail, 77–89 (83.9); culmen, 27–28.5 (27.6); tarsus, 23–24.5 (23.5); middle toe, 17–17.5 (17.2).<sup>b</sup>

Panamá (Lion Hill; Panamá; Chitra, Verágua), eastern Costa Rica (Talamanca; Río Sísola; Pacuare; Río Reventazón; Angostura; La Cristina; Carrillo; Guayabál; Cartago; La Vijágua), eastern Nicaragua (Río Escondido), and southeastern Honduras (Río Segóvia).

*Dendrocincla fumigata* (not *Dendrocolaptes fumigatus* Lichtenstein) LAWRENCE, Ann. Lyc. N. Y., vii, 1862, 320 (Lion Hill, Panamá).

*Dendromanens atirostris* SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1864, 355 (Panamá).—SALVIN, Proc. Zool. Soc. Lond., 1870, 193 (Chitra, Verágua, Panamá).

*Dendrocincla atirostris* (not *Dendrocops atirostris* Lafresnaye) SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1868, 54, part (Panamá).—ZELEDÓN, Anal. Mus. Nac. Costa Rica, i, 1888, 114 (Pacuare and Cartago, Costa Rica).

[*Dendrocincla*] *atirostris* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 67, part.

*Dendrocincla olivacea* (not *Dendrocops olivaceus* Eyton <sup>c</sup>) LAWRENCE, Ann. Lyc. N. Y., vii, Feb., 1862, 12 (Lion Hill, Panamá; coll. G. N. Lawrence).—RIDGWAY, Proc. U. S. Nat. Mus., x, 1888, 492, part (Costa Rica; Panamá; syn.; crit.), 592 (Segóvia R., Honduras).—SCLATER, Cat. Birds Brit. Mus., xv, 1890, 166, part (Angostura, Costa Rica; Chitra de Verágua, Panamá).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1891, 174, part (Segóvia R., Honduras; Talamanca, Cartago, Pacuare, and Angostura, Costa Rica;

<sup>a</sup> Nine specimens.

<sup>b</sup> Six specimens.

| Locality.                               | Wing. | Tail. | Culmen. | Tarsus. | Middle toe. |
|-----------------------------------------|-------|-------|---------|---------|-------------|
| FEMALES.                                |       |       |         |         |             |
| One adult female from Panamá.....       | 100.5 | 83.5  | 27      | 23      | 17          |
| Four adult females from Costa Rica..... | 107.5 | 85.8  | 27.6    | 23.8    | 17.2        |
| One adult female from Nicaragua.....    | 103   | 77    | 28      | 23      | 17          |

<sup>c</sup> = *Dendrocincla tyrannina* (Lafresnaye), fide Sclater, Cat. Birds Brit. Mus., xv, 1890, 164.

Chitra and Lion Hill, Panamá).—RICHMOND, Proc. U. S. Nat. Mus., xvi, 1893, 498 (Rio Escondido, Nicaragua).

[*Dendrocinclá*] *olivacea* SHARPE, Hand-list, iii, 1901, 75 (Honduras to Panamá; Colombia).

*Dendrocinclá ridgwayi* OBERHOLSER, Proc. Acad. Sci. Phila., Apr., 1904, 458 (Talamanca, Costa Rica; coll. U. S. Nat. Mus.).

*Dendrocinclá ridgwayi ridgwayi* CARRIKER, Ann. Carnegie Mus., vi, 1910, 651 (Caribbean lowlands, Costa Rica, up to 2,000 ft.; crit.; habits).

*Dendrocinclá olivacea olivacea* OBERHOLSER, Proc. Ac. Nat. Sci. Phila., Apr., 1904, 456 (monogr.).

## DENDROCINCLA HOMOCHROA HOMOCHROA (Sclater).

### RUDDY DENDROCINCLA.

*Adults (sexes alike).*—Above, including sides of head (except lores), plain clear chestnut or rufous-chestnut, the back and scapulars duller; lores light grayish; under parts plain dull tawny-ochraceous, darker (tawny-brown or deep brownish tawny) on chest, the under tail-coverts more rufescent; under wing-coverts clear tawny-ochraceous; inner webs of remiges vinaceous-cinnamon, the longer primaries dusky terminally; bill brownish horn color (more or less deep), paler on tomia and (sometimes) on mandible; legs and feet light brownish (in dried skins).

*Adult male.*—Length (skins), 175–193 (185); wing, 93–102 (97.9); tail, 68.5–80 (71.9); culmen, 23–25.5 (24.5); tarsus, 24.5–26.5 (25.6); middle toe, 16–17 (16.4).<sup>a</sup>

*Adult female.*—Length (skins), 185–191 (187); wing, 95–104 (100); tail, 75.5–80 (78.2); culmen, 24–26.5 (25); tarsus, 24–26.5 (25.3); middle toe, 15.5–17.5 (16.3).<sup>b</sup>

Southern Mexico, in States of Oaxaca (Teotalcingo; Chimalapa), Campeche (Apazote), and Yucatan (Izalám; Chichen-Itza; Puerto

<sup>a</sup> Seven specimens.

<sup>b</sup> Three specimens.

| Locality.                                                                           | Wing. | Tail. | Culmen. | Tarsus. | Middle toe. |
|-------------------------------------------------------------------------------------|-------|-------|---------|---------|-------------|
| MALES.                                                                              |       |       |         |         |             |
| One adult male from Campeche.....                                                   | 101.5 | 73.5  | 25.5    | 25.5    | 16.5        |
| Two adult males from Yucatan.....                                                   | 97.2  | 71    | 25      | 25.2    | 16.2        |
| Four adult males from British Honduras.....                                         | 97    | 72    | 23.8    | 25.7    | 16.4        |
| Ten adult males ( <i>D. h. acedesta</i> ) from Costa Rica.....                      | 104.4 | 77.9  | 25.5    | 26.3    | 17.2        |
| Two adult males ( <i>D. h. acedesta</i> ) from western Panamá.....                  | 106   | 78    | 25.5    | 26.5    | 17.3        |
| Nine adult males ( <i>D. h. ruficeps</i> ) from Panamá.....                         | 101   | 73.4  | 25.2    | 25.8    | 17.6        |
| FEMALES.                                                                            |       |       |         |         |             |
| One adult female from Campeche.....                                                 | 95    | 75.5  | 24      | 24      | 15.5        |
| Two adult females from British Honduras.....                                        | 103   | 79    | 25.5    | 26      | 16.7        |
| Nine adult females ( <i>D. h. acedesta</i> ) from Costa Rica (8) and Nicaragua..... | 99.6  | 71.1  | 24.3    | 25.8    | 17.2        |
| Two adult females ( <i>D. h. ruficeps</i> ) from Panamá.....                        | 99.3  | 76.3  | 25.7    | 25      | 17.7        |

Morelos; Meco Island; Mugerres Island; Cozumél Island) and southward through Guatemala (Chiséc; sources of Rio de la Pasión; Volcán de Agua; Savana Grande; Naranjo) to British Honduras (Orange Walk; Toledo District; near Manatee Lagoon).

*Dendromanes homochrous* SCLATER, Proc. Zool. Soc. Lond., 1859, 382 (Teotalcingo, Oaxaca, s. Mexico; coll. P. L. Sclater); Cat. Am. Birds, 1862, 162 (Oaxaca).—SALVIN, Ibis, 1861, 353 (Chisec, Guatemala).—LANTZ, Trans. Kansas Acad. Sci. for 1896-97 (1899), 221 (Naranjo, Guatemala).

*Dendrocinclá homochroa* SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1868, 54 (Mexico; Guatemala); Nom. Av. Neotr., 1873, 67.—BOUCARD, Proc. Zool. Soc. Lond., 1883, 450 (Izalám, n. Yucatan).—RIDGWAY, Proc. U. S. Nat. Mus., x, 1888, 491 (syn. crit.; Guatemala).—SALVIN, Ibis, 1889, 365 (Mugerres I. and Meco I., Yucatan).—SCLATER, Cat. Birds Brit. Mus., xv, 1890, 163, part (Oaxaca; Cozumél I., Mugerres I. and Meco I.; n. Yucatan; Savana Grande, sources Rio de la Pasión, Choctúm, and Volcan de Agua, Guatemala).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1891, 172, part (Chimalapa, Oaxaca; Orange Walk, Brit. Honduras, etc.).—CHAPMAN, Bull. Am. Mus. N. H., viii, 1896, 284 (Chichen-Itza, Yucatan).—COLE, Bull. Mus. Comp. Zool., I, 1906, 131 (Chichen-Itza).

[*Dendrocinclá*] *homochroa* GRAY, Hand-list, i, 1869, 180, no. 2460.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 67, part.—SHARPE, Hand-list, iii, 1901, 75, part.

*D[endrocinclá] homochroa* SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1868, 54.

*Dendrocinclá homochroa homochroa* OBERHOLSER, Proc. Ac. Nat. Sci. Phila., Apr., 1904, 462 (monogr.).

### DENDROCINCLA HOMOCHROA ACEDESTA Oberholser.

#### COSTA RICAN RUDDY DENDROCINCLA.

Similar to *D. h. homochroa* but larger and coloration darker throughout, the wings, tail, and pileum deep chestnut, the under parts deep russet brown, only slightly paler on throat and abdomen.<sup>a</sup>

*Adult male*.—Length (skins), 180-198 (188); wing, 101-108 (104.7); tail, 71.5-82 (78); culmen, 24-27 (25.5); tarsus, 25-27.5 (26.4); middle toe, 16.5-18 (17.2).<sup>b</sup>

*Adult female*.—Length (skins), 173-190 (180); wing, 95.5-104.5 (99.6); tail, 68-75.5 (71.1); culmen, 22.5-26.5 (24.3); tarsus, 24.5-26.5 (25.8); middle toe, 16.5-18 (17.2).<sup>c</sup>

Southwestern Nicaragua (Chinandega; Sucuyá; San Emilis, Lake Nicaragua), western Costa Rica (Volcán de Miravalles; La Vijagua; Tenório; Bolsón; Boruca; Las Trojas; Navarro; Naranjo de Cartago) and western Panamá (Volcán de Chiriquí).

*Dendromanes homochrous* (not of Sclater) SALVIN; Proc. Zool. Soc. Lond., 1870, 193 (Volcán de Chiriquí, Panama).

<sup>a</sup> I am somewhat doubtful whether this supposed form is really separable from *D. h. ruficeps*.

<sup>b</sup> Twelve specimens.

<sup>c</sup> Nine specimens.



*Dendrocincla homochroa* NUTTING, Proc. U. S. Nat. Mus., vi, 1884, 385, (Sucuyá, Nicaragua).—RIDGWAY, Proc. U. S. Nat. Mus., vi, 1884, 414 (Navarro, Costa Rica).—SCLATER, Cat. Birds Brit. Mus., xv, 1890, 163, part (Nicaragua; Costa Rica; Volcán de Chiriquí, Panamá).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1891, 172, part (Chinandega, El Volcán, and Sucuyá, Nicaragua; Navarro, Costa Rica; Volcán de Chiriquí).—CHERRIE, Expl. Zool. Merid. Costa Rica, 1893, 40 (Boruca, Costa Rica).—UNDERWOOD, Ibis, 1896, 440 (Volcán Miravalles, Costa Rica).

[*Dendrocincla*] *homochroa* SHARPE, Hand-list, iii, 1901, 75, part (Panamá).

*Dendrocincla homochroa ruficeps* (not *Dendrocincla ruficeps* Sclater and Salvin) RIDGWAY, Proc. U. S. Nat. Mus., x, sig. 31, Jan. 6, 1888, 489, 491, excl. syn. part (Sucuyá, Nicaragua; Navarro, Costa Rica; Chiriquí, Panamá).—ZELEDÓN, Anal. Mus. Nac. Costa Rica, i, 1888, 114 (Las Trojas, Costa Rica).

*Dendrocincla homochroa acedesta* OBERHOLSER, Proc. Ac. Nat. Sci. Phila., Apr., 1904, 462 (Chiriquí, Panamá; coll. U. S. Nat. Mus.).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 650 (Nicoya peninsula, Guanacaste, and Boruca, w. Costa Rica).

### DENDROCINCLA HOMOCHROA RUFICEPS (Sclater and Salvin).

#### PANAMA RUDDY DENDROCINCLA.

Similar to *D. h. acedesta* but coloration slightly lighter throughout, especially the under parts, which are also slightly less rufescent, with the throat less different from the general color.

*Adult male*.—Length (skins), 172–196 (188); wing, 97.5–107.5 (101.7); tail, 68.5–79 (73.4); culmen, 24–26.5 (25.2); tarsus, 24.5–27.5 (25.8); middle toe, 17–19 (17.6).<sup>a</sup>

*Adult female*.—Length (skins), 188–207 (197); wing, 95–103.5 (99.3); tail, 68–84.5 (76.3); culmen, 25–26.5 (25.7); tarsus, 25–26 (25.5); middle toe, 17.5–18 (17.7).<sup>b</sup>

Panamá (Panamá; El Banco and Boquete, Chiriquí).

*Dendrocincla ruficeps* SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1868, 54 (Panamá City, Panamá; coll. P. L. Sclater).—SCLATER, Cat. Birds Brit. Mus., xv, 1890, 164, excl. syn. part (Panamá).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1891, 173, excl. syn. part? (Panamá).—BANGS, Proc. New Engl. Zool. Club, iii, 1902, 46 (Boquete, Panamá, 4,000–4,500 ft.).—OBERHOLSER, Proc. Acad. Nat. Sci. Phila., 1904, 461 (monogr.).

[*Dendrocincla*] *ruficeps* GRAY, Hand-list, i, 1869, 180, no. 2463.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 67.—SHARPE, Hand-list, iii, 1901, 75.

### Order CORACIIFORMES.

#### CORACIINE BIRDS.

×*Picæ* LINNÆUS, Syst. Nat., ed. 10, i, 1758, 96. (Includes Cuculiformes, Buphagidæ, Corvidæ, Oriolidæ, Graculidæ, Paradiseidæ, Sittidæ, and Certhiidæ; excludes Striges.)

×*Picariæ* NITZSCH, Deutsch. Archiv für Physiol., vi, 1820, 255. (Includes Cuculiformes; excludes Striges); Syst. Pterylog., 1840, 121. (Includes Cuculiformes and *Opisthocomus*; excludes Striges.)

<sup>a</sup> Nine specimens.

<sup>b</sup> Two specimens.

- X *Picariæ* COUES, Key N. Am. Birds, 2d ed., 1884, 444. (Includes Cuculidæ; excludes Striges.)  
 < *Picariæ* SEEBOHM, Classif. Birds, 1890, pp. vii, xi, 19. (Excludes Striges, Trochilidæ, Colii, and Alcedines.)  
 < *Macrochires* (not of Nitzsch, 1829) CABANIS, in Wiegmann's Archiv für Naturg., 1847, 345. (=Macrochires+Caprimulgi.)  
 < *Strisores* LILLJEBORG, Proc. Zool. Soc. Lond., 1866, 12, 14. (Excludes Pici and Striges.)  
 X *Coccygomorphæ* HUXLEY, Proc. Zool. Soc. Lond., 1867, 466. (Includes Cuculidæ; excludes Caprimulgi and Macrochires.)  
 X *Anomalognathæ* GARROD, Proc. Zool. Soc. Lond., 1874, 117. (Includes Passeriformes; excludes Striges.)  
 < *Piciiformes* FORBES, Ibis, 1884, 119. (Excludes Todidæ, Meropidæ, Striges, Caprimulgi, Coraciæ, and Macrochires.)  
 X *Picariæ* SCLATER, Ibis, 1880, 399, 410. (Includes Cuculi; excludes Striges.)  
 X *Picariæ* STEJNEGER, Stand. Nat. Hist., iv, 1885, 368. (Includes Cuculi; excludes Striges.)  
 > *Coracornithes* FÜRBRINGER, Unters. Morph. Syst. Vög., ii, 1888, 1567. (Includes Cuculi.)  
 X *Pico-Passerres* SEEBOHM, Classif. Birds, 1890, 2. (Includes Passeriformes and Cuculi; excludes Striges, Coraciæ, Bucerotes, and Alcedines.)  
 X *Coraciiformes* SEEBOHM, Classif. Birds, 1890, 7, 19. (Includes Sarcorhamphi; excludes Macrochires, Pici, Upupæ, Trogones, Columbæ, Cuculi, and Striges.)  
 X *Passeriformes* SEEBOHM, Classif. Birds, 1890, vii, 1. (Includes Passeriformes, Columbæ, and Cuculi; excludes Anisodactylæ, Pamprodactylæ, and Coraciæ.)  
 < *Coraciiformes* SHARPE, Rev. At. Classif. Birds, 1891, 79, 80. (Excludes Striges, Trogones, and Pici.)  
 < *Coraciæ* SEEBOHM, Classif. Birds, 1890, pp. vii, xi, 21. (=Macrochires+Caprimulgi+Coraciæ+Meropidæ.)  
 < *Halcyones* SEEBOHM, Classif. Birds, 1890, pp. vii, xi, 20. (=Colii+Alcedines.)  
 < *Anisodactylæ* SCLATER, Ibis, 1880, 401, in text. (=Colii+Alcedines+Coraciæ+Caprimulgi.)  
 > *Dendroornithes* FÜRBRINGER, Unters. Morph. Syst. Vög., ii, 1888, 1567. (Includes Cuculi.)  
 < *Coracoidæ* STEJNEGER, Stand. Nat. Hist., iv, 1885, 371, 384. (=Caprimulgi+Coraciæ.)  
 < *Coraciiformes* FÜRBRINGER, Unters. Morph. Syst. Vög., ii, 1888, 1567. (=Coraciæ+Caprimulgi+Striges.)  
 = *Coraciiformes* GADOW, in Bronn's Thier-Reichs, Vög., ii, 1893, 223, 301; Classif. Vertebr., 1898, 36.—KNOWLTON, Birds of the World, 1909, 50.  
 X *Coraciidæ* CABANIS, in Wiegmann's Archiv für Naturg., 1847, pt. i, 342. (Includes Eurylaimi; excludes Pici, Macrochires, Caprimulgi, and Striges.)  
 < *Coraciidæ* GARROD, Proc. Zool. Soc. Lond., 1874, 117. (=Coraciæ+Momoti+Todi.)  
 < *Cuculinæ calopterae* NITZSCH, Syst. Pterylog., 1840, 126. (=Coraciæ+Momoti+Todi+Galbulæ.)  
 < *Todidæ* NITZSCH, Syst. Pterylog., 1840, 126. (=Coraciæ+Momoti+Todi+Galbulæ.)  
 X *Piciiformes* GARROD, Proc. Zool. Soc. Lond., 1874, 117. (=Pici+Ramphastides+Capitones+Upupæ+Bucerotes+Halcyones.)  
 < *Coraciæ* BEDDARD, Struct. and Classif. Birds, 1898, 204. (=Coraciæ+Meropes+Momoti+Todi+Galbulæ.)

Anomalogonatus <sup>a</sup> nonpasserine birds with deep plantar tendons of types I, V, Va, Vb, VI, VII, or VIII, or else palate desmognathous, or schizognathous in combination with raptorial feet (Striges) (saurog-nathous? in Pici), bronchial syrinx (Caprimulgi), or with not more than seven secondaries (*Trochili*), or ægithognathous in combination with short triangular bill, fissirostral gape, and ten greatly elongated primaries (Micropodii) or pointed manubrial process and forked vomer (Capitones, part); feet synpelmous, desmopelmous, heteropelmous, or antiopelmous, or if schizopelmous (Upupæ), the palate desmognathous; basipterygoid processes absent or present (rudimentary?); cervical vertebræ 13–15; nasals usually holorhinal.

## KEY TO THE SUBORDERS OF CORACIIFORMES.

- a. Feet neither desmopelmous nor raptorial (the flexor tendons never of type I); coracoids not connected; hypotarsus complex (except in Macrochires); myological formula with X (except in Macrochires); only one carotid (except in Superfamily Caprimulgi); cæca (if present) short, usually absent; syrinx tracheo-bronchial (except in Caprimulgi); aftershaft present (sometimes rudimentary in Caprimulgi and Pici); young gymnopædic (except in Nycticoraciæ).
- b. Myological formula without X (i. e., A); hypotarsus simple; spina interna present ..... **Macrochires** (p. 298)
- bb. Myological formula with X; hypotarsus complex; spina interna absent.
- c. Not synpelmous.
- d. Not schizopelmous; dorsal pteryla not forked between shoulders.
- e. Heteropelmous; feet heterodactylous, the flexor tendons of type VIII. **Heterodactylæ** (p. 729).
- ee. Antiopelmous; feet zygodactylous, the flexor tendons of type VI. **Zygodactylæ** (to be included in Part VI).
- dd. Schizopelmous; dorsal pteryla forked between shoulders. **Upupæ** (extralimital).<sup>b</sup>
- cc. Synpelmous.
- d. Dorsal pteryla not forked between shoulders.
- e. Feet anisodactylous..... **Anisodactylæ** (to be included in Part VI).

<sup>a</sup> Anomalogonatus birds are those which lack the ambiens muscle. Besides the Coraciiformes, the Passeriformes also are anomalogonatus, all other birds, according to Garrod (Proc. Zool. Soc. Lond., 1874, 116–118), being homalogonatus. The morphological value of this character was so greatly overestimated by Garrod that he made it the basis of his primary division of the Class Aves into two "Subclasses," Anomalogonatæ and Homalogonatæ.

<sup>b</sup> > *Upupinæ* Cabanis, in Wiegmann's Archiv für Naturg., 1847, pt. i, 343 (includes genus *Falculia*, an oscinine form usually referred to Corvidæ).—=*Upupidæ* Cabanis and Heine, Mus. Hein., ii, 1860, 127; Fürbringer, Uebers. Syst. Morph. Vög., ii, 1888, 1364.—=*Upupoidæ* Stejneger, Stand. Nat. Hist., iv, 1885, 408, in text.—> *Bucerotes* Fürbringer, Unters. Morph. Syst. Vög., ii, 1888, 1567 (includes *Bucerotes*).—=*Upupæ* Seebohm, Classif. Birds, 1890, 7; Sharpe, Rev. Classif. Birds, 1891, 80; Hand-List, ii, 1900, 70.

The Upupæ comprise two families, Upupidæ (Hoopoes) and Irrisoridæ (Wood Hoopoes), the former common to the Palearctic, Ethiopian, and Indian Regions, the latter confined to the Ethiopian Region.



- cc.* Feet pamprodactylous. . . . . **Pamprodactylæ** (extralimital).<sup>a</sup>  
*dd.* Dorsal pteryla forked between shoulders.  
*e.* Feet syndactyle or eleutherodactyle, the flexor tendons of type Va, or outer toe reversible; spina externa sterni well developed; syrinx tracheo-bronchial; only one (the left) carotid artery; young gymno-pædic. . . . . **Coraciæ** (extralimital).<sup>b</sup>  
*ee.* Feet anisodactyle, the flexor tendons of type Va (as in Macrochires), the outer toe never reversible; spina externa sterni vestigial; primaries 10; two carotid arteries, syrinx bronchial, and young ptilopædic (as in Striges). . . . . **Nycticoraciæ** (to be included in Part VI).  
*aa.* Feet desmopelmous and raptorial, the flexor tendons of type I; coracoids connected; hypotarsus simple; myological formula A; two carotid arteries; cæca long; syrinx bronchial; aftershaft absent or (rarely) rudimentary; primaries 11; young ptilopædic. . . . . **Nyctiharpages** (to be included in Part VI).

## Suborder MACROCHIRES.

## HUMMING BIRDS AND SWIFTS.

- = *Macrochires* NITZSCH, Obs. Av. art. carot. com., 1829, 15; Syst. Pterylog., 1840, 122.—BEDDARD, Struct. and Classif. Birds, 1898, 224.  
 > *Macrochires* CABANIS and HEINE, Mus. Hein., iii, 1860, 3 (includes Caprimulgidæ and Steatornithidæ).—SCLATER, Cat. Am. Birds, 1862, 278 (includes Caprimulgidæ).—GARROD, Proc. Zool. Soc. Lond., 1873, 463 (includes Caprimulgidæ and Steatornithidæ).  
 = *Makrochires* (emendation) FÜRBRINGER, Unters. Morph. Syst. Vög., 1888, 1567.  
 > *Strisores* CABANIS in Wiegmann's Archiv für Naturg., 1847, pt. i, 308, 345, 346 (includes Caprimulgidæ, Opisthocomidæ, and Musophagidæ!).  
 > *Cypselomorphæ* HUXLEY, Proc. Zool. Soc. Lond., 1867, 463 (includes Caprimulgidæ).  
 = *Cypseliformes* GARROD, Proc. Zool. Soc. Lond., 1874, 118.  
 = *Micropodii* KNOWLTON, Birds of the World, 1909, 50.  
 = *Micropodoideæ* STEJNEGER, Stand. Nat. Hist., iv, 1885, 435, in text.  
 = *Micropodoidei* COPE, Am. Nat., xxiii, 1889, 871, 872, 873.  
 = *Cypseli* (not of Ridgway, 1881) GADOW, Bronn's Thier-Reichs, Vög., iii, 1893, 245, 301; Classif. Vertebr., 1898, 37.

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<sup>a</sup> = *Coliomorphæ* (not of Sundevall, 1856) Murie, Ibis, July, 1872, 278. = *Pamprodactylæ* Murie, Ibis, iii, April, 1873, 190, foot-note. = *Colioideæ* Stejneger, Stand. Nat. Hist., iv, 1885, 371, 393, in text. = *Colii* Fürbringer, Unters. Morph. Syst. Vög., ii, 1888, 1567; Sharpe, Rev. Classif. Birds, 1891, 82; Hand-list, ii, 1900, 145; Gadow, in Bronn's Thier-Reichs, Vög., ii, 1893, 252, 301; Classif. Vertebr., 1898, pp. xv, 37.—Beddard, Struct. and Classif. Birds, 1898, 201; Knowlton, Birds of the World, 1909, 50. = *Colioidei* Cope, Am. Nat., xxiii, Oct., 1889, 871, 873.

The Pamprodactylæ comprise a single family, Coliidae (the Colies), represented by the genera *Colius* and *Urocolius* only, and are peculiar to the Ethiopian Region.

<sup>b</sup> < *Coraciadæ* Gray, Gen. Birds, i, June, 1845, 61; Hand-List, i, 1869, 75. — = *Coraciæ* Fürbringer, Unters. Morph. Syst. Vög., ii, 1888, 1567. — < *Coraciæ* Sharpe, Rev. Classif. Birds, 1891, 79 (= *Coraciidæ*); Hand-list, ii, 1900, 45. — < *Leptosomatæ* Sharpe, Rev. Classif. Birds, 1891, 79 (= *Leptosomatidæ*); Hand-list, ii 1900, 45. = *Coraciidæ* Gadow, Classif. Vertebr., 1898, 36. = *Coraciæ* Fürbringer, Uebers. Syst. Morph. Vög., ii, 1888, 1567.

An exclusively Old World group, comprising the families Coraciidæ and Leptosomatidæ, the former common to the Ethiopian, Indian, Indo-Malayan, and Ausfro-Malayan Subregions, the latter peculiar to Madagascar.

Medium-sized to extremely small Coraciiform birds with the myological formula A, hypotarsus simple, spina externa and spina interna present (but short); palate ægithognathous (Micropodii) or schizognathous (Trochili), humerus extremely short and manus relatively very long; bill either short and broadly triangular with gape deeply cleft and nostrils opening vertically, near together, and nonoperculate (Micropodii) or long and slender with nostrils opening laterally and broadly operculate and tongue extensile (Trochili).

Basipterygoid processes absent (rudimentary in some Micropodii); temporal fossæ deep; end of mandible truncated; vomer absent or rudimentary; nares holorhinal, impervious; coracoids separated; metasternum usually entire and convex (truncate or emarginate, with two foramina, in Macropterygidæ), the carina sterna very high; only the left carotid artery developed (except in Micropodii, part); cæca absent; oil-gland (if present) nude; syrinx tracheal (Micropodii) or tracheo-bronchial (Trochili); intestinal convolutions of type VI; flexor tendons of type V or Va, the hallux connected with the flexor perforans digitorum; semitendinosus, accessory semitendinosus, accessory femoro-caudal, and sterno-coracoideus muscles and biceps slip absent, the femoro-caudal muscle present; tensor patagii brevis peculiar, no tendon being developed and the fleshy belly running on to a special tendon which springs from the lower end of the outer surface of the humerus and is continued, parallel to the forearm, along the radial margin of the manus. Spinal pteryla well defined on neck, forked on upper back; lateral cervical pterylæ present, lateral cervical apterium absent; lateral cervical, nuchal, and spinal apteria present; occipital apterium present (indistinct in Micropodii); adult downs present (on apteria, only, in Trochili); aftershaft present; wing-coverts nonosciniine (the inverted middle series wanting); secondaries 6-11; primaries 10, the tenth, ninth, and eighth (usually the tenth) longest; the fifth cubital remex present (except in some Micropodii); rectrices 10; alula of 0-3 feathers; rictal bristles absent; skin of manus dark. Young nidicolous and gymnopædic.

KEY TO THE SUPERFAMILIES OF MACROCHIRES.<sup>a</sup>

- a. Palate schizognathous; toes anisodactylous, the deep plantar tendons passerine; ribs, 8 pairs; cervical hæmapophyses "U="; humero-coracoid groove or fossa present; tibial bridge absent; flexor tendons of type Vc; syrinx tracheo-bronchial; bill long and slender, the gape not deeply cleft; nostrils lateral, broadly operculate; tongue extensile; secondaries 6-7; alular feathers 0-1; frontal apterium present; femoral pterylæ small, connected with the dorsal pteryla; aftershaft small (sometimes rudimentary or, apparently, wanting).....**Trochili** (p. 300).
- aa. Palate ægithognathous; toes pamprodactylous, the deep plantar tendons coraciine; ribs, 6-7 pairs; cervical hæmapophysis " =T "; humero-coracoid groove or

<sup>a</sup> Anatomical characters chiefly from Gadow in Bronn's *Thier-Reich*, Birds, Syst. Theil, p. 83.

fossa absent; tibial bridge present; flexor tendons of type Va; syrinx tracheal; bill short and broadly triangular, the gape deeply cleft; nostrils opening vertically, close together, nonoperculate; tongue not extensile; secondaries 8-11; alular feathers 2-3; frontal apterium wanting; femoral pteryllæ large, separated from dorsal pteryla; aftershaft large.....**Micropodii** (p. 681).

### Superfamily TROCHILI.

#### THE HUMMING BIRDS.

=*Suspensi* ILLIGER, Prodr. Orn., 1811, 209.

=*Trochili* WAGLER, Nat. Syst. Amph., Säugth. und Vögel, 1830, 82.—SEEBOHM, Classif. Birds, 1890, pp. vii, xi, 5.—SHARPE, Rev. Classif. Birds, 1891, 81; Hand-list, ii, 1900, 97.

Small to extremely small Macrochires with slender bill, extensile tongue, lateral, operculate nostrils, schizognathous palate, eight pairs of ribs, alula absent or, when present, composed of a single feather, and not more than seven secondaries.

Metasternum entire, convex, the carina sterna greatly developed; humero-coracoid fossa present; cervical hæmapophyses "U="; flexor tendons of type Vc; toes anisodactylous, the front plantar leading to the three anterior toes, the hind plantar leading to the hallux, the feet relatively very small; a frontal apterium; femoral pteryllæ small, connected with the dorsal pteryla; aftershaft (if present) small or rudimentary; adult downs (if present) on apteria only.

### Family TROCHILIDÆ.

#### THE HUMMING BIRDS.

=*Trochilidæ* VIGORS, Trans. Linn. Soc. Lond., 1825, 468.—CABANIS, in Wiegmann's Archiv für Naturg., 1847, pt. i, 345.—BONAPARTE, Consp. Av., i, 1849, 67.—CABANIS and HEINE, Mus. Hein., iii, 1860, 3.—FÜRBRINGER, Unters. Morph. Syst. Vög., ii, 1888, 1381, 1382.—SHARPE, Hand-list, ii, 1900, 97.

As mostly additional to the characters given above under the heading of Superfamily Trochili, the following may be mentioned:

Palate schizognathous; nares holorhinal; neck very long, forming four-sevenths of the vertebral column; three free dorsal vertebræ, succeeded by a sacrum of twelve fused vertebræ, terminated by six caudal vertebræ; bones supporting the tail provided with long recurved processes "to furnish ample attachment for the well-defined caudal muscles;" eight pairs of ribs, the first three pairs joined to the three free dorsal vertebræ, the succeeding four pairs attached to the first four vertebræ of the sacral series, the eighth pair entirely free at upper end; coracoids peculiar, the usual notch in upper end being bridged over, forming a perforation through which the tendon from muscles that raise the wing play securely; sternum relatively very large, with keel extremely deep, the metasternum strongly convex and entire; bill slender, usually subulate,



sometimes compressed and often somewhat widened and depressed basally, extremely variable as to relative length (from decidedly shorter than head to longer than head, neck, and body together), usually straight or more or less (sometimes excessively) decurved, rarely recurved terminally; mandible with a more or less distinct median lateral groove or sulcus; nostrils basal, lateral, broadly operculate, but often completely hidden by dense frontal feathering; tongue extremely long, slender, extensile, split terminally, each lateral division with the outer edge curled upward and inward for part of its length, forming, in effect, two parallel tubes;<sup>a</sup> only one carotid artery (the left); feet small and usually relatively weak, the tarsus not longer than middle toe with claw; anterior toes all directed forward, subequal in length, the hallux well developed (nearly as large as anterior toes), the claws strongly curved and sharp; deep plantar tendons not Coraciine but much as in Eurylaimidæ (Desmodactyli<sup>b</sup>), the front tendon leading to the three anterior toes, the hinder one to the hallux; wing much as in the Micropodii, the primaries excessively developed and the secondaries correspondingly reduced, the latter not longer than the first (innermost) primary and only six to seven in number, the former ten in number, with the outermost (tenth) longest or (rarely) equal to the ninth (in genera *Aithurus* and *Goldmania*) distinctly shorter than ninth; rectrices ten, the tail excessively variable in relative length, form, etc.;<sup>c</sup> young nidicolous and gymnopædic; nest open above, variable as to form and position but usually cup-shaped and attached to a twig, composed of plant-downs or other soft materials, usually stuccoed exteriorly with bits of moss, lichen, or fragments of bark and spiders' webs; eggs one or (usually) two, broadly elliptical, immaculate white.

Inhabitants exclusively of America, the Humming Birds constitute not only the most charming element in the wonderfully varied bird-life of the Western Hemisphere, but, also, without doubt, the most remarkable group of birds in the entire world. No other group of birds is so brilliant in plumage or so different from all others in their mode of flight and manner of feeding. The general habits of Humming Birds are not dissimilar to those of birds in general. They are both aerial and arboreal, but are unable to progress upon the ground or any flat surface by means of their legs and feet alone. They perch readily and frequently upon trees or bushes, or may

<sup>a</sup> The tongue of Trochilidæ is described in detail by Dr. F. A. Lucas in Proc. U. S. Nat. Mus., xiv, 1891, 169-172, pl. iv, and Rep. U. S. Nat. Mus., 1892, 293, 294, where the reader is referred for further information on the subject.

<sup>b</sup> See Part I, p. 14.

<sup>c</sup> More so than in any other group of birds. For a detailed account of variations in the form of the tail, etc., in the Trochilidæ see Rep. U. S. Nat. Mus., 1892, 294-301.

even cling to rocks or other vertical surfaces; and their nidification presents nothing that may be deemed peculiar or even specially characteristic. In their flight and manner of procuring their food, however, they differ strikingly from all other birds, in these respects closely resembling certain insects, especially the crepuscular hawk-moths (*Sphingidæ*). Their food, consisting mainly of small insects but in part also of the nectar of flowers, is mostly gleaned from blossoms, before which they poise, with wings so rapidly vibrating as to be invisible except as a dim haze or halo partly surrounding the body and producing the humming sound from which these birds derive their vernacular name, the bill thrust inside the flower and the slender, semitubular tongue extended into the depths of the blossom. Some species, instead of feeding from flowers, glean their insect food from the bark of forest trees, following along the branches in suspended flight in the same manner that the others pass from flower to flower. In their feeding from flower to flower, Humming Birds, like bees, butterflies, and moths, perform the same office in the economy of nature as insects by transferring pollen from one bloom to another, and thus assisting in the fertilization of plants. In flying from one point to another, the flight of Humming Birds, while essentially direct, is usually more or less undulating, and so extremely rapid that the eye can scarcely follow. Often this flight is accompanied (at least in the case of males of some species) by a more or less remarkable screeching or grating sound, produced mechanically by some peculiarity of wing-structure.

Diminutiveness of size and metallic brilliancy of coloring are the chief external characteristics of Humming Birds, though exceptions to both occur; and in these respects they, as a group, have no rivals. Unfortunately stuffed specimens convey but a faint idea of their splendid coloring, for the perfection of their changeable refulgence can be fully realized only in the living bird, whose every change of position flashes to view a different hue—emerald green replacing ruby red, sapphire blue succeeding fiery orange, or either becoming opaque velvety black—according to the angle at which the sun's rays touch the feathers, an effect which can only partially be imitated with the stuffed specimen by artificially changing its position with reference to the light. Many species have a spot of the most luminous or brilliantly metallic color (usually green) that it is possible to imagine on the forehead at the base of the bill, this spot being surrounded by the most intense velvety black—evidently to enhance the brilliancy of the ornament by contrast, just as a jeweler would, for the same purpose, display a diamond or other gem against a background of black velvet. Often there is a spot of brilliant color and one of a contrasting hue just below it, the result

being that first one color, then the other, is flashed forth as the bird changes slightly its position.

NOTE TO TROCHILIDÆ.—(1) In descriptions of some of the species certain positions of the bird with reference to the eye and the angle of light are designated as “position *a*,” etc.<sup>a</sup> These positions may be described as follows:

(2) The vernacular names are mostly taken, with or without modification, from Gould’s “Monograph of The Trochilidæ.” In some cases it has seemed desirable, for the sake of greater brevity or euphony, to change or modify the names bestowed by Gould, while in the case of forms described since the publication of that magnificent work it has, of course, been necessary to invent new ones. At the best, however, it must be said that (as in the case of other groups of birds) many of these vernacular names are more or less fanciful and of slight utility.

KEY TO THE NORTH AND MIDDLE AMERICAN AND MORE CLOSELY RELATED SOUTH AMERICAN GENERA OF TROCHILIDÆ.

- a*. Nasal operculum well-developed (though sometimes concealed by frontal feathering); no white or buffy band across rump; adult males with outer web of ninth primary normal.
- b*. Nasal operculum higher, the lower edge of the posterior portion about midway between culmen and tomtia, or nearer to the former. (*Phæthornithinæ*.)
- c*. Bill excessively decurved, forming about one-third of a circle; feet very stout; under parts conspicuously streaked. . . . . *Eutoxeres* (p. 310).
- cc*. Bill only moderately or slightly decurved; feet much weaker; under parts not streaked.
- d*. Nasal operculum decumbent, with lower edge distinctly convex, at least posteriorly; bill more slender, compressed.
- e*. Tail graduated for at least half its length, with middle pair of rectrices more or less elongated. . . . . *Phæthornis* (p. 314).
- ee*. Tail graduated for less than half its length, with middle rectrices not elongated. . . . . *Glaucis* (p. 329).
- dd*. Nasal operculum excurrent, its lower edge more or less concave or arched; bill stouter, depressed. . . . . *Threnetes* (p. 336).
- bb*. Nasal operculum lower, the lower edge of its posterior portion much nearer to tomtia than to culmen. (*Trochilinæ*.)
- c*. Nasal operculum partly exposed.
- d*. Outermost (tenth) primary distinctly shorter than ninth; adult male with next to outer pair of rectrices greatly elongated and head with a double occipital crest . . . . . *Aithurus* (p. 338).
- dd*. Outermost (tenth) primary equal to or longer than ninth (or else with tips attenuated).
- e*. Frontal feathering extending as far forward as that of chin; exposed culmen at least as long as tail, the bill very slender, faintly recurved terminally. . . . . *Hemistephania* (p. 342).

<sup>a</sup> These positions, it should be stated, do not correspond with those similarly numbered by Gadow in his article on the color of feathers in Proc. Zool. Soc. Lond., 1882, 409–421 (see especially diagram on p. 420), which, so far as metallic coloring is concerned is based chiefly on sun-birds (Nectarinidæ) and other non-Trochiline forms, which seem to require more or less different positions.

(*a*) The eye between bird and light, bird’s bill toward eye, bird nearly horizontal.

(*b*) Eye directly above bird, the latter’s bill toward light, and position of its body nearly horizontal.

(*c*) Same as position *a*, but bird reversed (tail, instead of bill, toward eye).

(*d*) Bird between eye and light, tail toward eye, body inclined, with bill pointing upward.



- ee. Frontal feathering not extending as far forward as that of chin; exposed culmen shorter than tail, or else (*Anthoscenus*, part) the bill much stouter and not at all recurved terminally.
- f. Exposed culmen nearly to quite as long as tail; a white spot or streak on center of rump.....*Anthoscenus* (p. 344).
- ff. Exposed culmen much shorter than tail; no white on center of rump.
- g. Shafts of outer primaries with a more or less distinct median ridge on basal half (or more), or else the shaft conspicuously enlarged and bent in middle portion.
- h. Adult males with shafts of outer primaries conspicuously enlarged and bent in middle portion; bill relatively broader terminally and narrower basally (the lateral outlines more nearly parallel).
- i. Tail graduated, more than two-thirds as long as wing.
- ii. Tail truncate or slightly rounded, not more (usually less) than two-thirds as long as wing.....*Campylopterus* (p. 356).
- hh. Adult males with shaft of outer primary not conspicuously thickened nor bent; bill relatively narrower terminally, broader basally (narrowly wedge-shaped in vertical profile).
- .....*Phæochroa* (p. 362).
- gg. Shafts of outer primaries without trace of median ridge, and never enlarged nor bent in middle portion.
- h. Base of maxilla more denuded, the frontal feathering not extending as far as middle of nasal operculum (the latter almost wholly exposed).
- i. Tail emarginate or forked in adult males, emarginate or double-rounded in females and young.
- j. Under parts brownish gray in both sexes, and upper parts much duller in color.....*Phæoptila* (p. 366).
- jj. Adult males metallic green or green and blue below, the upper parts much brighter in color.....*Cynanthus* (p. 368).
- ii. Tail truncate or very slightly rounded or double-rounded.
- j. Wing three times as long as exposed culmen; adult males with a broad black auricular and white postocular stripe.
- .....*Basilinna* (p. 377).
- jj. Wing less than three times as long as exposed culmen; adult males without black or white on sides of head.
- .....*Hylocharis* (p. 384).
- hh. Base of maxilla less denuded, the frontal feathering extending forward to or beyond middle of nasal operculum (the latter with at least the upper basal portion concealed).
- i. Under tail-coverts all decomposed, plume-like.
- j. Larger (wing 62-72 mm.); tarsus naked; no white on tail.
- .....*Chalybura* (p. 386).
- jj. Smaller (wing 45-60 mm.); tarsus feathered; tail partly white;
- k. Maxillary tomium distinctly (but minutely) serrate terminally. secondaries partly rufous; bill longer (from base of nasal operculum one-fourth as long as wing).
- l. Outermost (tenth) primary much longer than ninth; adult males with under parts green.....*Eupherusa* (p. 393).
- ll. Outermost (tenth) primary not longer than ninth; adult male with under parts black.....*Callipharus* (p. 399).
- kk. Maxillary tomium not serrate terminally; secondaries without rufous; bill shorter (from nasal operculum less than one-fourth as long as wing).....*Elvira* (p. 401).

- ii. Under tail-coverts not all plume-like (all normal except in *Goldmania*).
- j. Nasal operculum mostly exposed.
  - k. Bill stouter, broader, abruptly widened at base; nasal operculum thicker, broader, more conspicuously exposed.
  - l. Tarsus mostly naked; lateral rectrices broadly tipped with white.....*Leucippus* (extralimital).<sup>a</sup>
  - ll. Tarsus mostly naked; lateral rectrices without white.  
*Amizilis* (p. 405).
  - kk. Bill more slender, narrower, not distinctly widened basally; nasal operculum thinner, narrower, with inner-posterior portion more extensively feathered.
  - l. Under tail-coverts well developed, normal; outermost primary longer than next(?), never attenuated at tip.
  - m. Under parts with at least lower abdomen white; tail olive-bronzy, usually darker subterminally.  
*Agyrtia* (p. 430).
  - mm. Under parts without white, or else tail purplish black or purplish bronze; tail usually black or dark steel blue.....*Saucerottia* (p. 434).
  - ll. Under tail-coverts small and short, the three median ones stiff and plume-like; outermost primary not longer than ninth, in adult male shorter and with tip attenuated.....*Goldmania* (p. 452).
- jj. Nasal operculum mostly concealed.
  - k. Bill decidedly decurved; tarsi mostly naked.
    - l. Frontal feathering not extending to anterior end of nasal operculum, the latter more exposed; rectrices and upper tail-coverts relatively narrower, the former more narrowly rounded at tip, the latter concolor with rump and back.  
*Anthracothonax* (p. 454).
    - ll. Frontal feathering extending to anterior end of nasal operculum, the latter more concealed; rectrices and upper tail-coverts relatively much broader, the former more broadly rounded or subtruncate at tip, the latter different in color from rump and back.
    - m. Remiges not metallic-colored; tail slightly rounded; pileum, back, rump, and throat green, chest blue or violet, upper tail-coverts blue and green.  
*Sericotes* (p. 473).
    - mm. Remiges brightly metallic green, like wing-coverts; tail emarginate; pileum, back, and rump velvety black, throat and chest reddish purple, upper tail-coverts bright metallic green....*Eulampis* (p. 477).

<sup>a</sup> *Leucippus* Bonaparte, Consp. Av., i, 1850, 73. Type, as fixed by Gray, 1855, *Trochilus fallax* Bourcier.—*Doleromyia* Bonaparte, Rev. et Mag. de Zool., May, 1854, 249; Ann. Sci. Nat. (Zool.), 4 sér., 1, 1854, 136. New name for *Leucippus* Bonaparte?—*Dolerisca* Cabanis and Heine, Mus. Hein., iii, Feb., 1860, 6. New name for “*Doleromyia*(!) Bp. 1854” and “*Leucippus* Gray, 1855 (nec Bp. 1849).” (Venezuela, including Margarita Island, and Colombia; monotypic?).

I would exclude from this genus *Trochilus chionogaster* Tschudi, *Leucippus pallidus* Taczanowski, *Thaumatias? chlorocercus* Gould, and *L. viridicauda* Sclater and Salvin. The last two of these I have not seen, but they seem to be closely allied to the first and second, which differ in many structural details and also (conspicuously) in coloration from *Leucippus fallax*. The generic name which they should bear is probably *Talaphorus* Mulsant (Hist. Nat. Ois.-Mouch., i, 1874, 257), the type of which is *Thaumatias? chlorocercus* Gould.

*kk.* Bill not decidedly if at all decurved; tarsi mostly feathered; upper tail-coverts normal (covering less than basal half of tail).

*l.* An auricular tuft of blue, violet, or reddish purple; tail blue, green, or bronzy olive, with a darker subterminal band.....**Colibri** (p. 480).

*ll.* No auricular tuft; tail not blue, green, or bronzy with darker subterminal band.

*m.* Exposed culmen only one-fourth as long as wing, less than two-fifths as long as tail; remiges rufous-chestnut basally.....**Lamprolaima** (p. 489).

*mm.* Exposed culmen more than one-fourth as long as wing, more than one-third as long as tail (or else the latter long and deeply forked); remiges wholly dusky.

*n.* A white postocular spot or streak (if this minute (*Panterpe*), the pileum metallic blue and throat bright metallic orange or orange-red.

*o.* Larger (wing more than 55 mm.).

*p.* Postocular white spot or streak conspicuous; bill broader; throat never orange or orange-red; sexes different in color.

*q.* Larger (wing 70 mm. or more); exposed culmen longer than head; under parts of body gray.

*r.* Tail less deeply emarginate, the lateral rectrices broadly tipped with white; adult male with throat metallic blue.

**Cyanolæmus** (p. 491).

*rr.* Tail more deeply forked, the lateral rectrices without white tips; adult males with throat reddish purple to violet.

**Lampornis** (p. 494).

*qq.* Smaller (wing not more than 65 mm.); exposed culmen shorter than head; under parts not gray.....**Oreopyra** (p. 501).

*pp.* Postocular white spot minute; throat metallic orange or orange-red, the sexes alike in color.

**Panterpe** (p. 511).

*oo.* Smaller (wing less than 50 mm.).

*p.* Exposed culmen nearly half as long as tail, the latter much less than two-thirds as long as wing in male, only half as long in female; pileum metallic blue, the throat also blue in adult male.

**Klais** (p. 513).

*pp.* Exposed culmen but little more than one-third as long as tail, the latter two-thirds as long as wing in male, nearly two-thirds as long in female; pileum metallic green, the upper throat metallic emerald green in adult male.

**Abeillia** (p. 516).

*nn.* No white postocular mark, or else (*Riccordia*) tail deeply forked and adult male with under parts wholly green.

*o.* Tail graduated.....**Damophila** (p. 518).

*oo.* Tail not graduated.



- p.* Lateral pair of rectrices not longer than middle pair; wing not less than 50 mm.
- Polyerata (p. 522).
- pp.* Lateral pair of rectrices longer than middle pair, or else (*Chlorostilbon*, female, part) wing less than 45 mm.
- q.* Bill relatively broader, distinctly depressed in middle portion, deeper subterminally; tail forked for much less than one-fourth its length, the rectrices relatively much broader; adult male with whole head dark metallic blue.....*Cyanophaia* (p. 526).
- qq.* Bill narrower, not at all depressed in middle portion, not deeper subterminally; tail forked for at least one-fourth its length or else (*Chlorostilbon*, part) the bill not as in *q*.
- r.* Nasal operculum with only the edge exposed; adult males with under parts of body at least partly blue or violet, or else pileum violet.....*Thalurania* (p. 530).
- rr.* Nasal operculum with much more than edge exposed; adult males with under parts of body never partly blue or violet, the pileum always green.
- s.* Bill slightly decurved, the exposed culmen more than half as long as tail; tail nearly to quite two-thirds as long as wing, forked for not more than five-sevenths its length.....*Lepidopyga* (p. 537).
- ss.* Bill straight, the exposed culmen less than half as long as tail and tail forked for more than five-sevenths its length, or else (*Chlorostilbon*, part) the tail much less than two-thirds as long as wing.
- t.* Frontal feathering not extending much beyond middle of nasal operculum; adult male with tail more than two-thirds as long as wing, forked for at least two-fifths its length, the lateral rectrices not narrowing terminally; a small white postocular spot....*Riccordia* (p. 542).
- tt.* Frontal feathering extending nearly if not quite to middle of nasal operculum; adult male with tail less than two-thirds as long as wing and forked for less than two-fifths its length, or else lateral rectrices narrowing terminally; no white postocular spot..*Chlorostilbon* (p. 547).
- cc.* Nasal operculum entirely concealed by closely appressed frontal feathering.
- d.* Base of maxilla less extensively feathered, the distance from frontal antiæ to tip of maxilla more than twice (usually several times) the distance from the same point to base of nasal operculum.
- e.* Bill excessively compressed anteriorly (acutely wedge-shaped in vertical profile); tomia distinctly serrate terminally.....*Heliothryx* (p. 561).

- ee. Bill not excessively compressed terminally (more linear or parallel-edged in vertical profile); tomia not serrate terminally.
- f. Larger (wing more than 60 mm.).
- g. Tarsal feathering short, not forming a fringe-like tuft posteriorly; rectrices relatively narrower, with tip rounded.
- h. Exposed culmen two-thirds to three-fourths as long as tail; tail not more than three-fifths as long as wing in adult male, less than three-fifths as long in female; deeply emarginate in adult male, slightly rounded or double-rounded in female; adult female not spotted below.....**Eugenes** (p. 564).
- hh. Exposed culmen slightly more than to less than half as long as tail, the latter more than two-thirds as long as wing in adult male, more than three-fifths as long in female, forked in male, deeply emarginate in female; adult female spotted with green below.....**Heliodoxa** (p. 570).
- gg. Tarsal feathering much developed posteriorly, forming a conspicuous fringe-like tuft; rectrices relatively broader, with tip subtruncate.
- h. Longest upper tail-coverts reaching to end of middle rectrices in adult male, nearly as far in female.....**Florisuga** (p. 575).
- hh. Longest upper tail-coverts reaching but little more than halfway to tip of tail.....**Melanotrochilus** (extralimital).<sup>a</sup>
- ff. Smaller (wing not more than 50 mm.).
- g. Tail less than half as long as wing; adult male with white pileum and dark purplish or blackish under parts.....**Microchera** (p. 580).
- gg. Tail not less than half as long as wing; adult males with pileum metallic green and under parts not dark purplish or blackish.
- h. Exposed culmen less than one-third as long as wing; tail not more than half as long as wing; adult male without metallic color on throat.....**Mellisuga** (p. 583).
- hh. Exposed culmen not less (usually more) than half as long as wing; tail more than half as long as wing; adult males with throat metallic red, purple, or violet.
- i. Rectrices broader subterminally (subspatulate); adult male with feathers of throat very narrow, pure white basally.  
**Stellula** (p. 587).
- ii. Rectrices not broader subterminally, but more or less tapering; adult males with feathers of throat broader, gray, dusky, or buffy basally.
- j. Bill straight, less than half as long as wing.
- k. Lateral rectrices little if any longer than middle pair, or else (males of *Calypte* and *Archilochus*) tail forked for less than half its length; adult males with tail less than three-fourths wing, not forked, or else (adult males of *Calypte* and *Archilochus*) forked for less than half its length.
- l. Plumage with more or less of rufous; tail rounded or graduated in males, strongly rounded in females.
- m. Tail less strongly rounded, none of the rectrices pointed or contracted terminally; adult males with lateral rectrices broadly tipped with white and with basal half rufous.....**Atthis** (p. 591).

<sup>a</sup> *Melanotrochilus* Deslongchamps, Guide d. Naturaliste, 1880, 7. (Type, *Trochilus fuscus* Vieillot.)

- mm.* Tail more strongly rounded or graduated, at least some of the rectrices pointed or contracted terminally in adult males; adult males without white tips to lateral rectrices, their basal half not rufous or else tail mostly rufous.....**Selasphorus** (p. 595).
- ll.* Plumage without any rufous; tail forked in males, double-rounded in females.
- m.* Inner primaries normal; adult males with pileum brilliant metallic purplish red or violet, like throat; the lateral feathers of the latter elongated; lateral rectrices not pointed.....**Calypte** (p. 618).
- mm.* Inner primaries with a small subterminal tooth on inner web; adult males with inner primaries abruptly reduced in size; pileum dull or dusky metallic green; feathers of sides of throat not elongated; lateral rectrices pointed.....**Archilochus** (p. 627).
- kk.* Lateral rectrices conspicuously longer than middle pair; adult males with tail at least three-fourths as long as wing, forked for more than half its length.
- l.* A conspicuous white or buffy spot on each side of rump; adult male with lateral rectrices broadly banded with white, adult female wholly light cinnamon-rufous below.  
**Tilmatura** (p. 637).
- ll.* No white or buffy spot on side of rump; adult males without white on lateral rectrices, adult females partly whitish below.
- m.* Wing relatively larger, with outer primary not attenuated terminally; adult males with lateral rectrices broadly edged with rufous on inner webs; adult female with tail more than half as long as wing.  
**Nesophlox** (p. 639).
- mm.* Wing relatively smaller, with outermost primary narrower and attenuated terminally; adult males with lateral rectrices wholly purplish dusky; adult females with tail not more than half as long as wing.  
**Calliphlox** (extralimital).<sup>a</sup>
- jj.* Bill distinctly decurved; exposed culmen more than half as long as wing (except in *Calothorax*, part).
- k.* Adult male with tail much longer than wing, forked for more than half its length, the lateral rectrices of uniform width throughout or slightly expanded terminally, with tip broadly rounded, and with lateral feathers of throat little if any elongated; adult female with tail nearly two-thirds as long as wing.....**Doricha** (p. 647).
- kk.* Adult male with tail shorter than wing, forked for less than half its length, the lateral rectrices narrowing terminally and pointed or narrowly rounded, the lateral feathers of throat much elongated; adult female with tail but little more than half as long as wing.....**Calothorax** (p. 651).

<sup>a</sup> *Calliphlox* Boie, Isis, 1831, 544 (type, *Trochilus amethystinus* Gmelin).—*Philodice* Mulsant and Verreaux, Classif. Troch., 1865, 86 (type, *Trochilus mitchelli* Bourcier). Venezuela and Trinidad to Brazil and Ecuador. (Two species.)



- dd. Base of maxilla more extensively feathered, the distance from frontal antiae to tip of maxilla not more than twice the distance from same point to base of nasal operculum (much less than twice in adult males).
- e. Distance from frontal antiae to tip of maxilla scarcely greater than from same point to base of nasal operculum; adult males with feathers of pileum developed into a conspicuous flattened pointed crest, brilliant golden or emerald green, sometimes passing into blue or violet posteriorly, the throat and chest sooty grayish, the tail uniform blackish; adult females with pileum dark metallic green, under parts light gray, and lateral rectrices tipped with gray..... *Orthorhyncus* (p. 656).
- ee. Distance from frontal antiae to tip of maxilla considerably greater than from same point to base of nasal operculum; adult male with whole pileum and nape brilliantly metallic red (the pileum not crested), throat and chest brilliantly metallic golden orange, the tail rufous, narrowly tipped with dark bronzy brown; adult female with pileum grayish brown or dull bronzy, under parts grayish white, and lateral rectrices tipped with white..... *Chrysolampis* (p. 665).
- aa. Nasal operculum almost rudimentary; a white or buffy band across rump; adult males with outer web of ninth primary abruptly excised or narrowed for terminal third or more. (*Lophornithinæ*.)
- b. Tail not forked or else (*Polemistria*) forked for much less than half its length, the rectrices broader, with rounded tip, their shafts not white beneath; adult males with a conspicuous ornamental crest or auricular or neck tufts (sometimes both).
- c. Base of maxilla more extensively feathered, the distance from frontal antiae to rictus nearly equal the distance from same point to tip of maxilla; tail relatively longer (more than two-thirds as long as wing), deeply emarginate, with outermost pair of rectrices longest; throat not metallic-colored; rectrices without rufous..... *Polemistria* (extralimital).<sup>a</sup>
- cc. Base of maxilla less extensively feathered, the distance from frontal antiae to rictus much less than distance from same point to tip of maxilla; tail relatively shorter (not more than two-thirds, usually only three-fifths, as long as wing), double-rounded, with outermost pair of rectrices shorter than middle pair; tail partly rufous; throat bright metallic green in adult males..... *Lophornis* (p. 669).
- bb. Tail forked for more than half its length, the rectrices narrower with pointed tip, their shafts white beneath—in adult males much longer than wing, very deeply forked, the lateral rectrices slender and attenuate; adult males without auricular tufts or neck tufts and without crest, or else the latter very long and slender..... *Popelairia* (p. 676).

#### Genus EUTOXERES Reichenbach.

*Eutoxeres* REICHENBACH, Av. Syst. Nat., 1849, pl. 40. (Type, *Trochilus aquila* Bourcier.)

*Myiactina* BONAPARTE, Rev. et Mag. de Zool., vi, pt. 2, 1854, 249. (Type, *Trochilus aquila* Bourcier.)

Rather large Trochilidæ (length about 110–130 mm.) with the bill very abruptly and excessively decurved (the culmen forming approximately one-third of a circle) and plumage of under parts conspicuously streaked.

<sup>a</sup> *Polemistria* Cabanis and Heine, Mus. Hein., iii, 1860, 63 (type, *Trochilus verreauxi* Bourcier).—*Aurinia* Mulsant, Cat. Ois.-Mouch., 1875, 27 (type, *Trochilus verreauxi* Bourcier).

Bill sickle-shaped, compressed except at base, where broad and depressed, the curve of the culmen forming nearly one-third of a circle; tomia smooth; maxilla with a narrow lateral groove parallel to culmen and a narrow ridge near tomium; culmen rounded, somewhat ridged basally. Nostril narrow, slit-like, overhung by a broad, convex, tumid naked operculum. Tarsus very stout, feathered for upper anterior portion, longer than anterior toes; toes all very stout, the middle and inner ones of equal length, the outer slightly but decidedly shorter; middle toe equally united to outer and inner toes, the extent of cohesion involving slightly less than basal phalanx; hallux very strong, slightly longer than outer toe (without claw). Wing decidedly more than twice as long as exposed culmen (chord), the outermost primary longest. Tail nearly to quite three-fourths as long as wing, graduated, the rectrices broad but tapering to an obtuse point terminally.

*Coloration*.—Above rather dull metallic green, the pileum dull dusky (sometimes a band of metallic greenish blue across hindneck); tail dull bronze or bronze-dusky, the rectrices tipped with whitish, or the three lateral pairs cinnamon, fading into whitish at tip; under parts conspicuously streaked with dusky and whitish or pale tawny. Sexes alike.

*Range*.—Costa Rica to northern Peru. (Four species.)

KEY TO THE SPECIES AND SUBSPECIES OF EUTOXERES.

- a. Pileum wholly feathered; lateral rectrices bronzy olive or grayish, with or without white tip.
- b. Tail bronzy olive (more greenish on middle rectrices), the lateral rectrices extensively white terminally. (*Eutoxeres aquila*.)
- c. White tips to rectrices longer, wedge-shaped basally, the shaft white for more than the white portion of the webs. (Central Colombia to eastern Ecuador.)  
**Eutoxeres aquila aquila** (extralimital).<sup>a</sup>
- cc. White tips to rectrices shorter, more truncated basally, the shaft white only as far as white portion of webs.
- d. Tail-spots nearly pure white; larger (male averaging: wing 73.7, tail 53.3, culmen 25.9). (Costa Rica to Colombia.) **Eutoxeres aquila salvini** (p. 312).
- dd. Tail-spots dull brownish white or pale buffy; smaller, with larger bill (male averaging: wing 71.5, tail 49.5, culmen 26.8). (Western Ecuador.)  
**Eutoxeres aquila heterura** (extralimital).<sup>b</sup>

<sup>a</sup> *Troch[ilus] aquila* Bourcier, Proc. Zool. Soc. Lond., xv, 1847, 42 (Bogotá, Colombia; coll. Loddiges).—*Eutoxeres aquila* Reichenbach, Aufz. der Colibr., 1854, 15; Mulsant and Verreaux, Hist. Nat. Ois.-Mouch., i, 1873, 27, pl. 1; Elliot, Synop. and Classif. Hum. Birds, 1879, 3, part; Salvin, Cat. Birds Brit. Mus., xvi, 1892, 261.—*E[utoxeres] aquila (typicus)* Hartert, Das Tierreich, Troch., 1900, 29.

<sup>b</sup> *E[utoxeres] heterura* Gould, Ann. and Mag. N. H., ser. 4, i, no. vi, June, 1868, 456, in text (Quito, Ecuador; coll. J. Gould).—*Eutoxeres heterura* Gould, Introd. Troch., oct. ed., 1861, 36; Elliot, Classif. and Synop. Troch., 1879, 3.—*Eutoxeres aquila* var. *heterura* Mulsant and Verreaux, Hist. Nat. Ois.-Mouch., i, 1873, 27.—*Eutoxeres aquila heterura* Taczanowski and Berlepsch, Proc. Zool. Soc. Lond., 1885, 102.—*E[utoxeres] aquila heterura* Hartert, Das Tierreich, Troch., 1900, 29.

- bb. Tail olive-grayish, the lateral rectrices with very minute (if any) whitish tips. (Ecuador.).....*Eutoxeres baroni* (extralimital).<sup>a</sup>  
 aa. Pileum with median line unfeathered; lateral rectrices tawny-ochraceous (paler terminally).....*Eutoxeres condamini* (extralimital).<sup>b</sup>

### EUTOXERES AQUILA SALVINI (Gould).

#### SALVIN'S SICKLE-BILL.

Similar to *E. a. heterura*, but white tips to rectrices averaging larger and always much purer white.<sup>c</sup>

*Adults (sexes alike).*—Above metallic bronze-green or greenish bronze, darker and duller on pileum, where feathers are narrowly and indistinctly margined with dusky, the upper tail-coverts (sometimes feathers of lower rump also) margined terminally with pale dull buffy; tail dull metallic bronze-green, the rectrices tipped with white, this most extended on lateral pair, where the basal outline of the white area on outer web is more or less transverse; remiges blackish slate or dusky, very faintly glossed with violaceous, the innermost secondary is usually marked with a narrow shaft-streak or subterminal spot of dull white; chin, throat, and chest sooty black sharply streaked with pale buff or buffy white, the breast and abdomen similarly marked, but streaks narrower and less strongly contrasted (the darker streaks more brownish); sides and flanks washed with metallic bronze-green; under tail-coverts dusky (glossed, more or less, with bronze-green), margined with brownish buff or pale cinnamon and with a narrow shaft-streak of the same; maxilla black, mandible pale dull yellowish (in dried skins), passing into dusky terminally; iris dark brown; legs and feet pale brownish (in dried skins), the scutella darker, more horn colored.

*Young.*—Similar to adults, but feathers of pileum, hindneck, back, and rump more or less distinctly tipped with buffy, the upper tail-coverts margined with the same, the greater wing-coverts very narrowly tipped with buffy, and remiges with a minute apical spot of dull whitish (larger on secondaries).

<sup>a</sup> *Eutoxeres baroni* Hartert (E. and C.), Novit. Zool., i, Jan., 1894, 12, 54 (Rio Pescado, near Naranjál, w. Ecuador; coll. Tring Mus.).—*E[utoxeres] baroni* Hartert (E.), Das Tierreich, Troch., 1900, 29.

<sup>b</sup> *Tr[ochilus] condamini* Bourcier, Compt. Rend., xxxii, 1851, 187 (Archidona, e. Ecuador).—*Eutoxeres condemnii* Gould, Mon. Troch., i, Nov., 1851, pl. 4; Intr. Troch., oct. ed., 1831, 37; Mulsant and Verreaux, Hist. Nat. Ois.-Mouch., i, 1873, 29, pl. 2; Elliot, Classif. and Synop. Troch., 1879, 3; Salvin, Cat. Birds Brit. Mus., xvi, 1892, 263, part.—*E[utoxeres] condemnii* Hartert, Das Tierreich, Troch., 1900, 28, part.—(?) *Eutoxeres condemnii gracilis* Berlepsch and Stolzman, Proc. Zool. Soc. Lond., 1902, 19 (Vitoc, Garita del Sol, centr. Peru; coll. Mus. Branicki).

<sup>c</sup> Compared with sixteen adults of *E. a. heterura* from Ecuador, twenty adults of *E. a. salvini* (including one from Bogotá) differ constantly and conspicuously in having pure white tips to the rectrices, all the others having these markings dull brownish white as well as less in extent.



*Adult male*.—Length (skins), 128–133 (130); wing, 68–77 (73.7); tail, 52.5–55.5 (53.3); culmen (chord), 25.5–26 (25.9).<sup>a</sup>

*Adult female*.—Length (skins), 120–129 (127); wing, 64.5–70.5 (68.5); tail, 48.5–55 (52.2); culmen (chord), 26–27.5 (26.7).<sup>b</sup>

Costa Rica (Carrillo; Turrialba; Tucurríqui; Róvalo; Pozo Azúl de Pirrís) and Panamá (Calovévora; Chitra; Calobre, and Belén, Verágua).

*Eutoxeres aquila* (not *Trochilus aquila* Bourcier) GOULD, Mon. Troch., part ii, Nov. 1, 1851 (vol. i, pl. 3); Introd. Troch., oct. ed., 1861, 36.—SALVIN, Proc. Zool. Soc. Lond., 1867, 152 (Belén, Verágua, Panamá).—LAWRENCE, Ann. Lyc. N. Y., ix, 1868, 120 (Tucurríqui, Costa Rica), 146 (crit.).—FRANTZIUS, Journ. für Orn., 1869, 315 (Costa Rica).—BOUCARD, Notes quelques Troch., 1873, 1, part (Costa Rica); The Hum. Bird, ii, 1892, 84, part (Verágua).—ELLIOT, Classif. and Synop. Troch., 1879, 3, part (Costa Rica; Verágua).—EUDES-DESLONGCHAMPS, Ann. Mus. Caen, i, 1880, 72.—RIDGWAY, Proc. U. S. Nat. Mus., iii, 1880, 308 (Verágua).—ZELEDÓN, Cat. Aves de Costa Rica, 1882, 19.

[*Eutoxeres*] *aquila* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 78, part (Verágua; Costa Rica).—SIMON, Cat. Troch., 1897, 7, part.

*Trochilus aquila* (not of Bourcier) LAWRENCE, Ann. Lyc. N. Y., vi, 1858, 139 (Verágua).

*Eutoxeres salvini* GOULD, Ann. and Mag. N. H., i, 1868, 456 (Verágua, Panamá; coll. J. Gould).—SALVIN, Proc. Zool. Soc. Lond., 1870, 204 (Calovévora, Panamá; crit.); Cat. Birds Brit. Mus., xvi, 1892, 262.—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 314 (Turrialba and Róvalo, Costa Rica; Belén, Chitra, Calobre, and Calovévora, Panamá).

[*Gryphus*] *salvini* GRAY, Hand-list, i, 1869, 123, no. 1547.

*Eutoxeres aquila*, var. *salvini* MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., i, 1873, 27, pl. 1.

*Eutoxeres heterura* (not of Gould) HARTERT (E. and C.), Novit. Zool., i, 1894, 53 part (crit.).

[*Eutoxeres*] *heterura* SHARPE, Hand-list, ii, 1900, 101, part (Costa Rica; Panamá).

*E[utoxeres] aquila heterura* HARTERT, Das Tierreich, Troch., 1900, 29 (monogr.).

*Eutoxeres aquila heterura* CARRIKER, Ann. Carnegie Mus., vi, 1910, 521 (Costa Rica; habits).

<sup>a</sup> Six specimens (five from Costa Rica, one from Verágua).

<sup>b</sup> Nine specimens (all from Costa Rica).

| Locality.                                                                 | Wing. | Tail. | Ex-<br>posed<br>cul-<br>men. |
|---------------------------------------------------------------------------|-------|-------|------------------------------|
| MALES.                                                                    |       |       |                              |
| Five adult males of <i>E. a. salvini</i> from Costa Rica.....             | 73.2  | 53.9  | 25.9                         |
| One adult male of <i>E. a. salvini</i> from Panamá (Chitra, Verágua)..... | 76.5  | 52.5  | 26                           |
| One adult male of <i>E. a. aquila</i> from Colombia (Bogotá).....         | 77.5  | 56    | 26.5                         |
| Nine adult males of <i>E. a. heterura</i> from w. Ecuador.....            | 71.5  | 49.5  | 26.8                         |
| FEMALES.                                                                  |       |       |                              |
| Nine adult females of <i>E. a. salvini</i> from Costa Rica.....           | 68.5  | 52.5  | 26.7                         |
| Four adult females of <i>E. a. heterura</i> from w. Ecuador.....          | 68.9  | 47    | 27                           |

## Genus PHÆTHORNIS Swainson.

- Phaethornis* SWAINSON, Zool. Journ., iii, no. xi, Dec., 1827, 357. (Type, *Trochilus superciliosus* Linnæus.)
- Phaethornis* (emendation) SWAINSON, Fauna Bor.-Am., ii, 1831, 322.
- Phrethornis* (typ. error?) BOIE, Isis, 1831, 548.
- Phaethornis* (emendation) SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 267.
- Phaethornis* (emendation) LESSON, Man. d'Orn., ii, June, 1828, 429.—ELLIOT, Classif. and Synop. Troch., 1879, 10.
- Phætornis* FERUSSAC, in Ferussac's Bull., xxiv, Feb., 1831, 201.—LESSON, Index Gen. et Synop. Troch., 1832, p. xiv.
- Phætornis* LESSON, L'Echo du Monde Sav., viii, sér. 2, 1843, col. 756.—BONAPARTE, Rev. et Mag. de Zool., 1854, 249.
- Phætornis* VOIGT, Das Thierreich, i, 1831, 640.—LICHTENSTEIN, Syst. Verz., 1844, 21.
- Phætornis* BONAPARTE, Consp. Av., i, 1850, 67.
- Phæthornis* JARDINE and SELBY, Illustr. Orn., ser., i, iii, pt. 10, Dec., 1835, 77.
- Ptyornis* REICHENBACH, Aufz. der Colibr., 1854, 14. (Type, *Trochilus eury-nome* Lesson.)
- Ametornis* REICHENBACH, Aufz. der Colibr., 1854, 14. (Type, *A. abnormis* Reichenbach=*Trochilus bourcieri* Lesson.)
- Ametornis* (emendation?) MULSANT, Ann. Soc. Linn. Lyon, n. s., xxii, 1876, 201.
- Orthornis* BONAPARTE, Rev. et Mag. de Zool., vi, pt. 2, 1854, 249. (Type, *Trochilus bourcieri* Lesson.)
- Guyornis* BONAPARTE, Rev. et Mag. de Zool., vi, pt. 2, 1854, 249. (Type, *Trochilus guyi* Lesson.)
- Toxoteuches*<sup>a</sup> CABANIS and HEINE, Mus. Hein., iii, Feb., 1860, 11. (Type, *Trochilus guyi* Lesson.)
- Mesophila* MULSANT and VERREAUX, Mém. Soc. Imp. Sci. Cherb., xii (sér. 2, ii), 1866, 161 (Classif. Troch., 17). (Type, *Trochilus yarugui* Lesson.)
- Anisoterus* MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., i, 1873, 72. (Type, *Trochilus pretrii* Lesson and Delattre.)
- Milornis* MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., i, 1873, 77. (Type, *Trochilus squalidus* Temminck.)
- Pygmornis* BONAPARTE, Rev. et Mag. de Zool., vi, pt. 2, 1854, 250. (*Trochilus intermedius* Lesson=*T. longuemareus* Lesson.)
- Pygornis* (emendation?) MULSANT and VERREAUX, Mém. Soc. Imp. Sci. Nat. Cherb., xii (sér. 2, ii), 1866, 162 (Classif. Troch., 18).
- Momus* MULSANT and VERREAUX, Mém. Soc. Imp. Sci. Nat. Cherb., xii (sér. 2, ii), 1866, 162 (Classif. Troch., 19). (Type, *Pygmornis obscura* Gould=*Trochilus idaliæ* Bourcier.)
- Eremita* (not of Cocteau, 1837) REICHENBACH, Aufz. der Colibr., 1854, 14. (Type, *Trochilus rufigaster* Vieillot=*T. pygmæus* Spix.)

Rather large to small Trochilidæ (length about 90–155 mm.) with very long, more or less decurved bill, long, graduated tail with middle rectrices at least twice as long as lateral pair, middle toe united to outer except for its terminal phalanx, tarsi feathered, and coloration usually very dull, devoid of metallic hues except on upper parts (where rarely brilliant), the under parts rarely with any metallic coloring.

<sup>a</sup> “Von τοξοτεύχης, mit Pfeil und Bogen ausgerüstet, d. h. mit bogenförmigem Schnabel und pfeilförmigen Schwanzfedern.” (Cabanis and Heine.)

Bill very long (nearly twice to nearly three times as long as head), more or less decidedly decurved, broader than deep at base, the culmen rounded except for mesorhinal portion, where compressed into a narrow ridge; mandible with a broad and distinct lateral groove, the maxilla sometimes faintly grooved; tomia smooth. Nostril narrow, slit-like, overhung by a broad, tumid, mostly unfeathered operculum. Tarsus feathered (more or less completely), longer than anterior toes (without claw), these about equal in length, the hallux shorter and weaker; middle toe united to outer toe except for its terminal phalanx. Wing decidedly longer than bill, the outermost primary longest. Tail about as long as wing (sometimes decidedly longer), excessively graduated, the middle pair of rectrices at least twice as long as lateral pair, sometimes several times as long, often attenuated terminally.

*Coloration*.—Above usually olivaceous, more or less glossed with metallic green or bronze, the upper tail-coverts rufescent or tipped with tawny, buffy, or whitish; rectrices dusky, tipped or terminally margined with whitish, buffy, or rusty, the elongated middle pair whitish, or at least paler, terminally; under parts buffy grayish, ochraceous, or tawny, the throat sometimes with a broad median area of striped grayish or plain buffy whitish. Sexes alike. (One or two species have the sexes decidedly different in coloration, the adult male being glossy metallic green above, more bluish on upper tail-coverts, the under parts glossed laterally with the same.)

*Range*.—Southern Mexico to Cayenne, southeastern Brazil, Bolivia, and Ecuador. (About fifty species and subspecies.)

#### KEY TO THE SPECIES AND SUBSPECIES OF PHÆTHORNIS.

- a. Larger (wing more than 50 mm.). (*Phæthornis*.)
  - b. Under parts mostly slate-gray or metallic bluish green; upper parts bright bluish green passing into green, bluish green, or blue on upper tail-coverts. (*Phæthornis guyi*.)
  - c. Rump and upper tail-coverts decidedly greenish (green or bluish green); adult males with under parts mostly gray (more or less dark).
  - d. Rump and upper tail-coverts green, the back bronze-green or greenish bronze. (Venezuela and Trinidad.)

*Phæthornis guyi guyi* (extralimital).<sup>a</sup>

<sup>a</sup> *Trochilus guy* Lesson, Hist. Nat. Troch., 1829, 119, pl. 44.—[*Phæthornis*] *guy* Bonaparte, Consp. Av., i, 1850, 67.—*Phæthornis guyi* Gould, Mon. Troch., i, 1852, pl. 26; Elliot, Classif. and Synop. Troch., 1879, 13; Salvin, Cat. Birds Brit. Mus., xvi, 1892, 268.—*P[haethornis] guy (typicus)* Hartert, Das Tierreich, Troch., 1900, 19 (mon.).—*T[oxoteuches] guyi* Cabanis and Heine, Mus. Hein., iii, 1860, 11, part.—*Phæthornis guy* Léotaud, Ois. Trinidad, 1866, 129.—*Guyornis typus* Bonaparte, Rev. et Mag. de Zool., 1854, 249.



dd. Rump and upper tail-coverts bluish green, the back less bronzy; general coloration darker. (Colombia; Ecuador?; Peru?)

**Phæthornis guyi emiliæ** (extralimital).<sup>a</sup>

cc. Rump and upper tail-coverts decidedly blue (greenish blue); adult males with under parts mostly metallic green. (Costa Rica and Panamá.)

**Phæthornis guyi coruscus** (p. 317).

bb. Under parts neither slate-gray nor metallic; upper parts dull greenish or bronzy, much broken by buffy margins to feathers; upper tail-coverts mostly greenish bronze or buffy.

c. Upper tail-coverts buffy or tawny, barred with dusky or dark bronzy; under parts mostly buffy. (*Phæthornis longirostris*.)

d. Lateral rectrices margined terminally with buff.

e. Under parts less strongly buffy, the median throat-stripe narrower.

f. Under parts paler (especially sides of throat), not distinctly if at all barred. (Guatemala to northern Honduras.)

**Phæthornis longirostris longirostris** (p. 319).

ff. Under parts darker (especially sides of throat), more or less distinctly barred with darker. (Southern Honduras to Panamá.)

**Phæthornis longirostris cephalus** (p. 321).

dd. Lateral rectrices margined terminally with white.

e. Paler and smaller (adult male, wing 60-65.5, tail 65-70, culmen 39-42.5). (Southeastern Mexico.)...**Phæthornis longirostris veræcrucis** (p. 323).

cc. Darker and larger (adult male, wing 67-69.5, tail 83-87, culmen 45.5-47). (Southwestern Mexico.)...**Phæthornis longirostris mexicanus** (p. 323).

cc. Upper tail-coverts bronze-green margined with buffy; under parts dull grayish white, slightly if at all tinged with buffy. (*Phæthornis anthophilus*.)

d. Green of upper parts paler and more bronzy; upper tail-coverts more broadly margined with buffy; under parts slightly buffy. (Colombia and Venezuela.).....**Phæthornis anthophilus anthophilus** (extralimital).<sup>b</sup>

dd. Green of upper parts deeper and less bronzy, the upper tail-coverts less broadly margined with buffy; under parts more grayish white. (San Miguél Island, Bay of Panamá.)

**Phæthornis anthophilus hyalinus** (p. 324).

aa. Smaller (wing less than 45 mm.). (*Pygmornis*.)

b. Chin and throat not streaked; lateral rectrices broadly margined terminally with deep cinnamon-buff or ochraceous-buff. (*Phæthornis adolphi*.)

c. Paler, especially the throat and chest, the chin not dusky. (Southeastern Mexico.).....**Phæthornis adolphi adolphi**, adult male (p. 324).

cc. Darker, especially throat and chest, the chin distinctly more dusky. (Guatemala to Panamá.).....**Phæthornis adolphi saturatus** (p. 326).

<sup>a</sup> *T[rochilus] emiliæ* Bourcier and Mulsant, Ann. Sci. Phys. et Nat. Lyon, ix, 1846, 317 (Bogotá, Colombia).—[*Phæthornis*] *emiliæ* Bonaparte, Conspectus, Av., i, 1850, 67.—*Phæthornis emiliæ* Gould, Introd. Troch., oct. ed., 1861, 44; Elliot, Classif. and Synop. Troch., 1879, 13, part; Salvin, Cat. Birds Brit. Mus., xvi, 1892, 368, part.—*Toxoteuches emiliæ* Heine, Journ. für Orn., 1863, 177.—*Phæthornis guyi* var. *emiliæ* Mulsant and Verreaux, Classif. Troch., 1866, 17.—*Phæthornis guyi emiliæ* Berlepsch, Journ. für Orn., 1887, 314 (Bogotá).—(?) *Trochilus apicalis* Tschudi, Fauna Peruana, 1845-'46, 243.—(?) [*Phæthornis*] *apicalis* Bonaparte, Conspectus, Av., i, 1850, 68.—[*Phæthornis*] *guyi emiliæ* Hartert, Das Tierreich, Troch., 1900, 19 (monogr.).

<sup>b</sup> *Trochilus anthophilus* Bourcier, Rev. Zool., vi, March, 1843, 71 (Upper Magdalena Valley, Colombia; coll. J. Bourcier).—[*Phæthornis*] *anthophilus* Bonaparte, Conspectus, Av., i, 1850, 68.—*Phæthornis anthophilus* Gould, Mon. Troch., i, 1854, pl. 24; Elliot, Classif. and Synop. Troch., 1879, 16; Salvin, Cat. Birds Brit. Mus., xvi, 1892, 275.

bb. Chin and upper throat streaked with dusky; lateral rectrices more narrowly edged with whitish (sometimes buffy on outermost ones). (*Phæthornis striigularis*.)

c. Throat and chest more grayish; sides and flanks paler; outermost rectrices margined terminally with pale buffy or whitish. (Colombia.)

*Phæthornis striigularis striigularis* (p. 327).

cc. Throat and chest more buffy; sides and flanks darker (nearly cinnamon-rufous); outermost rectrices margined terminally with light cinnamon-rufous or tawny ochraceous. (Western Ecuador.)

*Phæthornis striigularis atrimentalis* (extralimital).<sup>a</sup>

### PHÆTHORNIS GUYI CORUSCUS Bangs.

#### BANGS' HERMIT.

Similar to *P. g. emiliæ*,<sup>b</sup> of Colombia, but much brighter in coloration, the green of upper parts more bluish, passing into blue (instead of green or bluish green) on upper tail-coverts and base of tail, the fully adult males with under parts mostly metallic bluish green; tail averaging shorter.

*Adult male*.—Above bright metallic bluish green, duller on pileum, passing into bright metallic blue or violet-blue on upper tail-coverts and basal portion of tail; longer upper tail-coverts with a subterminal bar of blackish and a narrow terminal bar or margin of pale grayish buffy or dull buffy whitish; terminal half (approximately) of tail black, the contracted terminal portion of elongated middle rectrices pale grayish with whitish tips and shafts; remiges purplish dusky, the inner secondaries glossed with bluish green; under parts mostly bright metallic bluish green, this usually somewhat duller along median line and passing into, or inclining to, dull slate color on lower abdomen, the median portion of chin and throat, more or less distinctly, tawny; under tail-coverts metallic greenish blue, or dusky grayish glossed with greenish blue, centrally, broadly margined with grayish white; indistinct femoral tufts grayish white; maxilla black, mandible pale (reddish or yellowish in life?), with terminal portion dusky; iris dark brown; feet brownish (in dried skins); length (skins), 131–153 (143); wing, 59.5–63.5 (61.5); tail, 47–64.5 (42.6); culmen, 41–45 (42.6).<sup>c</sup>

*Adult female*.—Upper parts as in adult male but upper tail-coverts more broadly tipped or terminally margined with pale grayish buffy, feathers of rump also very narrowly margined terminally with the same, and with narrowed portion of middle pair of rectrices much

<sup>a</sup> *Phæthornis atrimentalis* Lawrence, Ann. Lyc. Nat. Hist. N. Y., vi, 1858, 260 (bet. headwaters of Rio Napo and Quito, Ecuador; coll. G. N. Lawrence).—[*Phæthornis striigularis*] *atrimentalis* Simon, Cat. Troch., 1897, 7.—*Phæthornis striigularis atrimentalis* Oberholser, Proc. U. S. Nat. Mus., xxiv, no. 1258, Jan. 18, 1902, 313 (Milligalli, w. Ecuador; crit.).

<sup>b</sup> See p. 316.

<sup>c</sup> Twenty specimens.

longer and broader, with rounded instead of acuminate tip; a broad postocular (supra-auricular) streak, long rictal (subauricular) streak, of buff (more or less deep); auricular region dull blackish; median portion of chin and throat (broadly) ochraceous-buff to almost tawny, the lateral portions dusky; rest of under parts (except under tail-coverts) plain mouse gray or slate-gray, the sides usually glossed, more or less, with metallic bluish green; under tail-coverts grayish white, with a central V-shaped mark of grayish (sometimes glossed with bluish green or greenish blue); lateral rectrices margined terminally with white, especially on outer web; bill, etc., as in adult male; length (skins), 154-168 (158); wing, 57-62.5 (60); tail, 61-72 (67.7); culmen, 38-42.5 (40.8).<sup>a</sup>

*Immature male*.—Similar in coloration to the adult female but having the narrowed tip of middle rectrices much smaller, narrower, and (usually) more pointed, as in adult males.

*Young male*.—Similar to the immature male (as described above) but feathers of rump and lower back, also those of hindneck (sometimes those of whole upper surface) margined terminally with brownish buffy, those of sides of throat and chest also with indistinct buffy or paler tips or margins.

*Young female*.—Similar in coloration to the young male but middle pair of rectrices with the narrowed terminal portion much longer and broader and more rounded at tip.

Costa Rica (Angostura; Tucurrique; Turrialba; Coliblanco; Peralta; Carrillo; Volcán de Irazú; Juan Viñas; La Estrella de Cartago; Naranjo de Cartago; Tres Rios; La Hondura; Cariblanco de Sarapiquí; La Vijagua; Peorsnada; Ojuras de Térraba; Dota Mountains; Los Reyes, Santa Maria de Dota; El General; Pozo del Rio Grande; Barranca) and Panamá (Boquete; Volcán de Chiriquí; Laguna del Castillo; Calovévora; Cordillera del Chucu; Santa Fé de Veragua); northwestern Colombia (Truando Falls)?

<sup>a</sup> Fourteen specimens.

| Locality.                                                              | Wing. | Tail. | Ex-<br>posed<br>culmen. |
|------------------------------------------------------------------------|-------|-------|-------------------------|
| MALES.                                                                 |       |       |                         |
| Ten adult males from Costa Rica.....                                   | 61.4  | 54.8  | 42.8                    |
| Ten adult males from Panamá.....                                       | 61.6  | 56.4  | 42.4                    |
| Three adult males ( <i>P. g. emiliae</i> ) from central Colombia.....  | 61.5  | 62.3  | 42.3                    |
| FEMALES.                                                               |       |       |                         |
| Ten adult females from Costa Rica.....                                 | 60.1  | 67.1  | 40.7                    |
| Four adult females from Panamá.....                                    | 59.7  | 68.9  | 41                      |
| Five adult females ( <i>P. g. emiliae</i> ) from central Colombia..... | 62.3  | 60.1  | 41.5                    |



- Phaethornis emiliae* (not *Trochilus emiliae* Bourcier and Mulsant) SALVIN, Proc. Zool. Soc. Lond., 1867, 152 (Santa Fé de Veragua, Panamá; crit.); 1870, 205 (Calovévora, Boquete de Chitra, and Cordillera del Chucu, Panamá).—FRANTZIUS, Journ. für Orn., 1869, 315 (Costa Rica).—BOUCARD, Proc. Zool. Soc. Lond., 1878, 67 (Tres Rios and Naranjo de Cartago, Costa Rica).
- [*Phaethornis*] *emiliae* SHARPE, Hand-list, ii, 1900, 98, part (Costa Rica; Panamá).
- Phaethornis emiliae* LAWRENCE, Ann. Lyc. N. Y., ix, 1868, 121 (Angostura and Barranca, Costa Rica).—ELLIOT, Classif. and Synop. Troch., 1879, 13, part (Costa Rica; Verigua).—RIDGWAY, Proc. U. S. Nat. Mus., iii, 1880, 309, part (Costa Rica).—ZELEDÓN, Anal. Mus. Nac. Costa Rica, i, 1887, 121 (Costa Rica).
- Phaethornis emiliae* SALVIN and ELLIOT, Ibis, 1873, 13, part (Veragua; Costa Rica; synon.; crit.).—ZELEDÓN, Cat. Aves de Costa Rica, 1882, 19.—SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 268, 662, part (Volcán de Irazú and Tucurrique, Costa Rica; Boquete de Chitra, Laguna del Castillo, Calovévora, and Santa Fé de Veragua, Panamá).—SALVIN and GODMAN, Biol. Centr.-Am., Aves., ii, 1892, 317 (San José, Peorsnada, Turrialba, etc., Costa Rica; localities in Panamá; Truando Falls, n. Colombia?).
- [*Phaethornis*] *emiliae* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 78, part (Veragua; Costa Rica).
- Toxateuches emiliae* BOUCARD, The Hum. Bird, ii, 1892, 84, part (Veragua); Gen. Hum. Birds, 1895, 374, part (Costa Rica; Veragua).
- P[*haethornis*] *guyi emiliae* HARTERT, Ibis, 1897, 429, part (Costa Rica).
- (?) *Phaethornis yaruqui* (not *Trochilus yaruqui* Bourcier) CASSIN, Proc. Ac. Nat. Sci. Phila., 1860, 194 (Truando Falls, n. Colombia).
- Phaethornis guy coruscus* BANGS, Proc. New Engl. Zool. Club, iii, Jan. 30, 1902, 26 (Boquete, Chiriquí, Panamá, 4,500 ft. alt.; coll. E. A. and O. Bangs); Auk, xxiv, 1907, 295 (Pozo del Rio Grande, Costa Rica).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 519 (Costa Rica; habits).—FERRY, Pub. 146, Field Mus. N. H., orn. ser., i, no. 6, 1910, 264 (Coliblanco, Costa Rica).

### PHÆTHORNIS LONGIROSTRIS LONGIROSTRIS (Delattre).

#### GUATEMALAN HERMIT.

*Adults (sexes alike).*—Pileum plain dusky (nearly clove brown) faintly glossed with bronze-green, the hindneck similar but feathers margined terminally with brownish buff or cinnamon; back, scapulars, and lesser wing-coverts rather dull metallic bronze-green, the feathers sometimes indistinctly margined terminally with dull buffy; rump and upper tail-coverts buff or clay color, barred with dusky (glossed faintly with bronze-green), the bars broader (transverse spots) on rump, narrower on upper tail-coverts; basal (mostly concealed) portion of tail dull bronze-greenish, passing subterminally into dull black, the tip pale buff or buffy whitish—the middle pair of rectrices with narrowed and elongated portion mostly white, passing anteriorly into the blackish part through a grayish shading; remiges dusky, faintly glossed with violaceous; a broad postocular streak (extending to above eye) dull white; loreal, suborbital, and auricular regions dull black or dusky, bordered below by a rather ill-defined rectal streak of dull whitish; chin and throat with a broad median stripe of pale buff or dull cream-buff, bordered on each side by a

lateral stripe of darker brownish buff, the feathers of which are dusky beneath the surface; rest of under parts pale dull grayish buffy, paler (sometimes dull whitish) on abdomen, the under tail-coverts with a few indistinct V-shaped marks of grayish; maxilla black, mandible pale yellowish or buffy (yellow in life?), with terminal third (more or less) dusky; iris dark brown; feet pale brownish (in dried skins).

*Young*.—Similar to adults, but feathers of back broadly margined terminally with brownish buff, those of the pileum usually marked in same manner, but more narrowly.

*Adult male*.—Length (skins), 144–158 (150.5); wing, 59–64.5 (62); tail, 64–68 (66.5); culmen, 39–44 (40.7).<sup>a</sup>

*Adult female*.—Length (skins), 142–156 (149); wing, 60; tail, 63.5–67 (65.2); culmen, 37.5–40 (38.7).<sup>b</sup>

Guatemala (Choctúm, Cobán, and Las Salinas, Vera Paz; Los Amates, Yzabál; track to Petén; Guatemala City); British Honduras (Cayo; San Felipe; Toledo District; forest near Manatee Lagoon; forest on Soldiers Creek), and northern Honduras (Céiba).

*Ornismya longirostris* DELATTRE, Echo du Monde Savant, June 15, 1843, no. 45, col. 1070 (Guatemala).

*Phaethornis longirostris* GOULD, Introd. Troch., oct. ed., 1861, 42, part ("Central America").—SCLATER, Cat. Am. Birds, 1862, 285, part (Las Salinas, Vera Paz, Guatemala).

*Phaethornis longirostris* ELLIOT, Classif. and Synop. Troch., 1879, 15, part.—DEARBORN, Pub. 125, Field Mus. N. H., 1907, 96 (Los Amates, e. Guatemala).

*P[haethornis] longirostris* CABANIS and HEINE, Mus. Hein., iii, 1860, 9 (Guatemala).—HARTERT, Ibis, 1897, 425, 429, part (crit.); Das Tierreich, Troch., 1900, 20, part (Guatemala).

[*Phaethornis*] *longirostris* SHARPE, Hand-list, ii, 1892, 99, part.

<sup>a</sup> Four specimens.

<sup>b</sup> One specimen.

| Locality.                                                                            | Wing. | Tail. | Ex-<br>posed<br>culmen. |
|--------------------------------------------------------------------------------------|-------|-------|-------------------------|
| MALES.                                                                               |       |       |                         |
| Four adult males of <i>P. l. mexicanus</i> from s. w. Mexico.....                    | 68.1  | 84.6  | 46.1                    |
| Six adult males of <i>P. l. verzeurci</i> from s. e. Mexico.....                     | 62.9  | 67.9  | 40.3                    |
| One adult male of <i>P. l. longirostris</i> from Guatemala.....                      | 59    | 64    | 40.5                    |
| Two adult males of <i>P. l. longirostris</i> from British Honduras.....              | 62.2  | 67    | 39.2                    |
| One adult male of <i>P. l. longirostris</i> from n. Honduras (Céiba).....            | 64.5  | 68    | 44                      |
| Three adult males of <i>P. l. cephalus</i> from s. Honduras (Santa Ana).....         | 64.6  | 68    | 42.9                    |
| Two adult males of <i>P. l. cephalus</i> from Nicaragua.....                         | 61.2  | 68    | 38.5                    |
| Sixteen adult males of <i>P. l. cephalus</i> from Costa Rica.....                    | 61.9  | 67.2  | 38.5                    |
| Nine adult males of <i>P. l. cephalus</i> from Panamá.....                           | 61.1  | 66    | 38.9                    |
| Eight adult males of <i>P. l. susurrus</i> from Colombia (Santa Marta district)..... | 64.7  | 72.2  | 42.2                    |
| FEMALES.                                                                             |       |       |                         |
| One adult female of <i>P. l. longirostris</i> from Guatemala.....                    | 60    | 67    | 37.5                    |
| One adult female of <i>P. l. longirostris</i> from British Honduras.....             | 60    | 63.5  | 40                      |
| Ten adult females of <i>P. l. cephalus</i> from Costa Rica.....                      | 60.5  | 66.6  | 38.5                    |
| One adult female of <i>P. l. cephalus</i> from Panamá.....                           | 57.5  | 63.5  | 37.5                    |
| One adult female of <i>P. l. susurrus</i> from Colombia (Santa Marta district).....  | 63    | 70    | 41                      |

*Phaethornis longirostris* SALVIN and ELLIOT, Ibis, 1873, 5, part (Choctúm, Guatemala; crit.).—BOUCARD, Liste Ois. récol. Guat., 1878, 44.—SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 273, 663, part (Choctúm, Guatemala; San Felipe, Brit. Honduras).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 318, part (San Felipe, British Honduras; Yzabál, Choctúm, and track to Petén, Guatemala).

[*Phaethornis*] *longirostris* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 78, part.

*Phaethornis longirostris* LANTZ, Trans. Kansas Ac. Sci. for 1896-97 (1899), 221 (Cayo, British Honduras).

*Phaethornis longirostris longirostris* OBERHOLSER, Proc. U. S. Nat. Mus., xxiv, no. 1258, Jan., 1902, 312, in text, 313, part.

*Phaethornis longirostris longirostris* BANGS, Bull. Mus. Comp. Zool., xxxix, July, 1903, 144 (Céiba, n. Honduras).

*Phaethornis cephalus* (not *Trochilus cephalus* Bourcier and Mulsant) SCLATER and SALVIN, Ibis, 1859, 126 (Guatemala).—SALVIN, Ibis, 1866, 204 (Guatemala).

[*Phaethornis*] *cephale* BOUCARD, Notes quelques Troch., 1873, 1, part (Cobán, Guatemala; habits).

*Phaethornis cephalus* GOULD, Mon. Troch., pt. xvi, 1858 (vol. i, 1861), pl. 19, part (Guatemala).

*Phaethornis cephalus* MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., i, livr. 1, 1873, 64, part (Guatemala).

### PHÆTHORNIS LONGIROSTRIS CEPHALUS (Bourcier and Mulsant).

#### NICARAGUAN HERMIT.

Similar in coloration to *P. l. longirostris* but coloration darker, the under parts usually distinctly, though faintly, barred with brownish gray.

*Adult male*.—Length (skins), 127–165 (159); wing, 58–66.5 (61.9); tail, 61–75 (67); culmen, 36.5–44 (39.8).<sup>a</sup>

*Adult female*.—Length (skins), 136–154 (147); wing, 57.5–62.5 (60.2); tail, 63.5–70 (66.3); culmen, 37–41.5 (38.5).<sup>b</sup>

Honduras (Santa Ana), Nicaragua (Rio San Juan; Chontales; Rio Escondido; San Emilis, Lake Nicaragua), Costa Rica (San José; Naranjo de Cartago; La Balsa; Palmár; Jiménez; El Hogár; Guápiles; Rio Sicsola; Cuábre; La Vijagua; Tenório; Volcán de Miravalles; Boruca; Pozo del Pitál; Pozo Azul de Pirrís; Pozo del

<sup>a</sup> Thirty specimens.

<sup>b</sup> Eleven specimens.

| Locality.                                                 | Wing. | Tail. | Culmen. |
|-----------------------------------------------------------|-------|-------|---------|
| MALES.                                                    |       |       |         |
| Three adult males from southern Honduras (Santa Ana)..... | 64.6  | 68    | 42.9    |
| Two adult males from Nicaragua.....                       | 61.2  | 68    | 38.5    |
| Sixteen adult males from Costa Rica.....                  | 61.9  | 67.2  | 38.5    |
| Nine adult males from Panamá.....                         | 61.6  | 66    | 38.9    |
| FEMALES.                                                  |       |       |         |
| Ten adult females from Costa Rica.....                    | 60.5  | 66.6  | 38.5    |
| One adult female from Panamá.....                         | 57.5  | 63.5  | 37.5    |



Rio Grande; El Pozo de Térraba; Buenos Aires; Laguária; Santa Maria de Dota), Panamá (Loma del León; Panamá; Obispo; Chepo; Agua Dulce; Bugaba; Divala), and northwestern Colombia (Turbo).

*Trochilus cephalus* BOURCIER and MULSANT, Rev. Zool., 1848, 269 (Rio San Juan, Nicaragua; coll. J. Gould).

[*Ptyonornis*] *cephalus* REICHENBACH, Aufz. der Colibr., 1854, 14.

[*Ptyonornis*] *cephala* REICHENBACH, Troch. Enum., 1855, 12.

*Phaëtornis cephalus* BONAPARTE, Rev. et Mag. de Zool., 1854, 249.

*Phaetornis cephalus* MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., i, livr. 1, 1873, 64, part (Nicaragua; Panamá); iv, livr. 2, 1877, 140.

[*Phaetornis*] *cephalus* MULSANT, Ann. Soc. Linn. Lyon, xxii, 1876, 200.

*Phaëthornis cephalus* GOULD, Mon. Troch., i, pt. xvi, 1858; vol. i, 1861, text to pl. 19, part (Rio San Juan, Nicaragua; Veragua; crit.).

*Phaëthornis longirostris* (not *Ornismya longirostris* Delattre) GOULD, Mon. Troch., Introd., p. xl, part ("Central America"); Introd. Troch., oct. ed., 1861, 42, part ("Central America").—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1864, 364 (Panamá).—FRANTZIUS, Journ. für Orn., 1869, 315 (Costa Rica).—SALVIN, Proc. Zool. Soc. Lond., 1870, 205 (Bugaba, Panamá).—BOUCARD, Proc. Zool. Soc. Lond., 1878, 67 (Naranjo de Cartago, Costa Rica; habits).—RICHMOND, Proc. U. S. Nat. Mus., xvi, 1893, 516 (Rio Escondido, Nicaragua; habits).—UNDERWOOD, Ibis, 1896, 442 (Volcán de Miravalles, Costa Rica).—BANGS, Proc. New Engl. Zool. Club, ii, 1900, 19 (Loma del León, Panamá).

*P[haëthornis] longirostris* HARTERT, Ibis, 1897, 425, 429, part (crit.); Das Tierreich, Troch., 1900, 20, part.

[*Phaëthornis*] *longirostris* SHARPE, Hand-list, ii, 1900, 99, part.

*Phaethornis longirostris* LAWRENCE, Ann. Lyc. N. Y., vii, 1862, 319 (Lion Hill, Panama); ix, 1868, 128 ("Valza," i. e. La Balsa, Costa Rica).—ELLIOT, Classif. and Synop. Troch., 1879, 15, part.—ZELEDÓN, Cat. Aves de Costa Rica, 1882, 19; Anal. Mus. Nac. Costa Rica, i, 1887, 121 (Jiménez, Costa Rica).—BOUCARD, The Hum. Bird, ii, 1892, 83 (Panamá).

*Phaethornis longirostris* SALVIN, Ibis, 1872, 319 (Chontales; Nicaragua); Cat. Birds Brit. Mus., xvi, 1892, 273, 663, part (Nicaraguan, Costa Rican, and Panaman localities).—SALVIN and ELLIOT, Ibis, 1873, 5, part (Chontales, Nicaragua; Costa Rica; Bugaba and Lion Hill, Panamá; synon.; crit.).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 318, part (Santa Ana, s. Honduras; Rio San Juan and Chontales, Nicaragua; La Balsa, Jiménez, San José, and Naranjo de Cartago, Costa Rica; Bugaba, Lion Hill, Obispo, and Chepo, Panamá; Turbo, n. Colombia).—CHERRIE, Expl. Zool. Merid. Costa Rica, 1893, 45 (Palmár, Boruca, and Buenos Aires, Costa Rica).—BOUCARD, Gen. Hum. Birds, 1895, 377, part (Costa Rica).—BANGS, Auk, xviii, 1901, 359 (Divala, Panamá; crit.).

[*Phaethornis*] *longirostris* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 78, part.

*Phaetornis longirostris* CHERRIE, Anal. Inst. Fisico-Geog. Costa Rica, vi, 1893, 19 (Pozo del Pitál, s. w. Costa Rica).

*Phoethornis longirostris longirostris* OBERHOLSER, Proc. U. S. Nat. Mus., xxiv, 1902, 312 in text, 313, part.

*Phaëthornis longirostris longirostris* BANGS, Auk, xxiv, 1907, 295 (Boruca and Pozo del Rio Grande, Costa Rica).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 520 (Costa Rica; habits; descr. nest and eggs).

*Phaethornis panamensis* BOUCARD, The Humming Bird, ii, no. 9, Sept., 1892, 83 (Panamá City and Agua Dulce, Veragua, Panamá; coll. A. Boucard).

*Phaethornis panamensis* BOUCARD, Gen. Hum. Birds, 1895, 377 (Panamá; Agua Dulce).

**PHÆTHORNIS LONGIROSTRIS VERÆCRUCIS** Ridgway.**VERA CRUZ HERMIT.**

Similar to *P. l. longirostris* but tips of lateral rectrices pure white, or merely tinged with buff on inner web.

*Adult male*.—Length (skins), 150–158 (154); wing, 60–65.5 (62.9); tail, 65–70 (67.9); culmen, 39–42.5 (40.3).<sup>a</sup>

Southeastern Mexico, in States of Vera Cruz (Córdova; San Andrés Tuxtla; Santecomapám; Buena Vista; Motzorongo); Oaxaca (Chimalapa), and Tabasco (Teapa).

*Phaethornis longirostris* (not *Ornismya longirostris* Delattre) SCLATER, Proc. Zool. Soc. Lond., 1857, 227 (San Andrés Tuxtla, Vera Cruz).—SALVIN and ELLIOT, Ibis, 1873, 5, part (Mexico; synon.; crit.).—SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 273, 663, part (Chimalapa, Oaxaca).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 318, part (Córdova and San Andrés Tuxtla, Vera Cruz; Chimalapa, Oaxaca).—BOUCARD, Gen. Hum. Birds, 1895, 377, part (Mexico).

[*Phaethornis*] *longirostris* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 78, part. *Phaethornis longirostris* ELLIOT, Classif. and Synop. Troch., 1879, 15, part (Mexico).

*Phaethornis cephalus* (not *Trochilus cephalus* Bourcier and Mulsant) GOULD, Mon. Troch., pt. xvi, 1858, text to pl. 19, part (Mexico).

*Phaethornis cephalus* MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., i, livr. 1, 1873, 64, part (Mexico).

*Phaethornis cephalus* D'Oca, Troq. de Mex., 1875, 48, pl. (10), fig. 37.

[*Phaethornis*] *cephale* BOUCARD, Notes quelques Troch., 1873, 1 (Santecomapám, Vera Cruz; habits).

*Phaethornis longirostris veræcrucis* RIDGWAY, Proc. Biol. Soc. Wash., xxiii, April 19, 1910, 54 (Buena Vista, Vera Cruz, e. Mexico; coll. U. S. Nat. Mus.).

**PHÆTHORNIS LONGIROSTRIS MEXICANUS** (Hartert).**GUERRERO HERMIT.**

Similar to *P. l. veræcrucis* in white margins to rectrices but coloration of under parts much darker, superciliary stripe and anterior portion of rictal stripe ochraceous-buff instead of cream-buff, and size decidedly larger.

*Adult male*.—Length (skins), 182–187 (185); wing, 67–69.5 (68.1); tail, 83–87 (84.6); culmen, 45.5–47 (46.1).<sup>b</sup>

Southwestern Mexico, in States of Guerrero (Dos Arroyos; Chilpancingo; Acahuitzotla; Papayo) and western Oaxaca (Pluma).

*Phaethornis longirostris* (not *Ornismya longirostris* Delattre) HARTERT (E. and C.), Novit. Zool., i, 1894, 21 (Dos Arroyos, near Chilpancingo, Guerrero; crit.).

*Phaethornis mexicanus* HARTERT, Ibis, iii, ser. 7, July, 1897, 425 (Dos Arroyos, near Chilpancingo, Guerrero, s. w. Mexico; coll. Tring Mus.).

*P[haethornis] mexicanus* HARTERT, Ibis, 1897, 429; Das Tierreich, Troch., 1900, 21 (monogr.).

[*Phaethornis*] *mexicanus* SHARPE, Hand-list, ii, 1900, 99.

<sup>a</sup> Four specimens.

<sup>b</sup> Six specimens.

*Phoethornis longirostris mexicanus* OBERHOLSER, Proc. U. S. Nat. Mus., xxiv, no. 1258, Jan., 1902, 312 in text, 313 (s. Mexico).

*P[haethornis] [longirostris] mexicanus* RIDGWAY, Proc. Biol. Soc. Wash., xxiii, 1910, 54, in text.

### PHÆTHORNIS ANTHOPHILUS HYALINUS (Bangs).

#### ISLAND HERMIT.

Similar to *P. a. anthophilus* but green of upper parts deeper and less bronzy, and feathers of rump and upper tail-coverts less broadly margined with brownish buffy; averaging slightly larger (except tail.)

*Adults (sexes alike).*—Pileum plain dusky (nearly clove brown); hindneck, back, scapulars, rump, and upper tail-coverts metallic green (nearest bice green), slightly tinged with bronze, the feathers very narrowly and indistinctly margined terminally with pale brownish buffy, except on upper tail-coverts, where these markings are broader and more distinct; tail metallic bluish green (French green), crossed subterminally by a broad band of black, the middle pair of rectrices with narrowed and elongated portion white apically, dull grayish basally, the other rectrices with median portion of tip dull gray and lateral portions white; remiges dusky, faintly glossed with violaceous; a broad postocular or supra-auricular elongated spot of dull brownish white; loreal, orbital, and auricular regions black; rictal and malar regions dull white or buffy white; chin and throat buffy grayish, indistinctly streaked with pale buffy or buffy whitish; rest of under parts dull brownish white, deeper and suffused with brownish buff on sides, the flanks distinctly buffy; maxilla black, mandible pale dull yellowish or buffy (in dried skins); iris dark brown; feet light brownish (in dried skins), the claws dusky.

*Adult male.*—Length (skins), 135–139 (138.5); wing, 58.5–61.5 (59.2); tail, 55–58.5 (56.5); culmen, 35–36.5 (35.7).<sup>a</sup>

*Adult female.*—Length (skins), 138; wing, 55.5–58.5 (57); tail, 58.5; culmen, 33–34.5 (33.7).<sup>b</sup>

San Miguél Island, Bay of Panamá.

*Phaethornis hyalinus* BANGS, Auk, xviii, Jan., 1901, 27 (San Miguél Island, Bay of Panamá; coll. E. A. and O. Bangs).—THAYER and BANGS, Bull. Mus. Comp. Zool., xlvi, 1905, 149 (San Miguél I.).

### PHÆTHORNIS ADOLPHI ADOLPHI Gould.

#### BOUCARD'S HERMIT.

*Adult male.*—Above rather dull metallic bronze or greenish bronze, darker and duller on pileum; lower rump and upper tail-coverts

<sup>a</sup> Four specimens.

<sup>b</sup> Two specimens.

Specimens of *P. a. anthophilus* measure as follows: Four adult males, length (skins), 128–153 (136); wing, 54.5–61 (57.7); tail, 56–59.5 (58); culmen, 30.5–36 (34.5); one adult female, length (skin), 132; wing, 54; tail, 56; culmen, 33.



plain chestnut; tail metallic bronze or greenish bronze, the rectrices broadly tipped with pale chestnut or cinnamon-rufous, paler on middle pair, which are sometimes nearly white terminally; remiges dusky, faintly glossed with violaceous; suborbital and auricular regions dusky, margined above by an indistinct supra-auricular streak of cinnamon and below (anteriorly) by a more distinct rictal streak of the same; chin, throat, and chest light dull grayish cinnamon or isabella color, passing on other lower parts into pale cinnamon-rufous; bill dull black, the basal half (more or less) of mandible dull yellowish (yellow in life); iris dark brown; feet dull yellowish (flesh colored or whitish in life); length (skins), 91-98 (95); wing, 38.5-42 (39.5); tail, 33-37.5 (35.4); culmen, 21-22.5 (21.7).<sup>a</sup>

*Adult female*.—Similar to the adult male but chin, throat, and chest pale cinnamon-rufous or pale cinnamon, sometimes quite concolor with posterior under parts; length (skins), 92-99 (94); wing, 37; tail, 33-35 (34); culmen, 21-22 (21.5).<sup>b</sup>

Southeastern Mexico, in States of Vera Cruz (Córdova; Tospám, near Córdova; Playa Vicente; Jalapa; San Andrés Tuxtla; Buena Vista; Pasa Nueva), Oaxaca (Teotalcingo), Tabasco (Frontera), and Chiapas (Palenque).

*Phaethornis adolphi* SCLATER, Proc. Zool. Soc. Lond., 1856, 287 (nomen nudum; Córdova, Vera Cruz).

*Phaethornis adolphi* GOULD, Mon. Troch., pt. xiv, Sept., 1857 (vol. i, 1861), pl. 35 and text, part (Córdova, Vera Cruz; coll. J. Gould; ex Bourcier, manuscript).—SCLATER, Proc. Zool. Soc. Lond., 1859, 367 (Jalapa, Vera Cruz), 385 (Teotalcingo, Oaxaca; Playa Vicente, Vera Cruz).—D'OCA, Troq. de Mex., 1875, 24, pl. (4), fig. 15.

[*Phaethornis*] *adolphi* GRAY, Hand-list, i, 1869, 122, no. 1532, part.—SHARPE, Hand-list, ii, 1900, 100, part.

*P[haethornis] adolphi* HARTERT, Ibis, 1897, 430, part (s. e. Mexico); Das Tierreich, Troch., 1900, 25, part.

*P[hæthornis] a[dolphi] adolphi* RIDGWAY, Proc. Biol. Soc. Wash., xxiii, April 19, 1910, 54, in text.

*P[ygmornis] adolphi* CABANIS and HEINE, Mus. Hein., iii, 1860, 7, footnote, part (Mexico).

*Pygmornis adolphi* SALVIN and ELLIOT, Ibis, 1873, 271, part (Mexico).—BOUCARD, Notes quelques Troch., 1873, 2, part (Córdova and San Andrés Tuxtla, Vera Cruz).—MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., i, livr. 2, 1873, 102, pl. 9; iv, livr. 2, 1877, 144; Ann. Soc. Linn. Lyon, xxii, 1876, 201.—SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 282, part (Córdova; Playa Vicente; Teapa).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 319, part (Córdova; Jalapa; Playa Vicente; Teotalcingo; Teapa).

[*Pygmornis*] *adolphi* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 79, part.

*Pygornis adolphi* MULSANT and VERREAUX, Classif. Troch., 1866, 19, part.

*Eremita adolphi* BOUCARD, Gen. Hum. Birds, 1895, 392, part (Tospám, near Córdova).

<sup>a</sup> Five specimens.

<sup>b</sup> Two specimens.

## PHŒTHORNIS ADOLPHI SATURATUS Ridgway.

## DUSKY HERMIT.

Similar to *P. a. adolphi*, but coloration of adult decidedly darker, especially the under parts, the chin and upper throat decidedly dusky.

*Adult male*.—Length (skins), 86–97 (89); wing, 36–40 (38.3); tail, 31–37 (34.4); culmen, 20.5–23.5 (21.8).<sup>a</sup>

*Adult female*.—Length (skins), 78–96 (89); wing, 36–39 (37.9); tail, 32–37 (34.5); culmen, 20–23 (21.5).<sup>a</sup>

Central America, from Guatemala <sup>a</sup> (Cobán; Kamkál, near Cobán; Yzabal; Guatemala City; Lanquín, Vera Paz; Puerto Bárrios; Secanquín) and British Honduras (forest near Manatee Lagoon) through Honduras (Rio Segóvia), Nicaragua (Chontales; Rio Escondido; San Emilis, Lake Nicaragua) and Costa Rica (Angostura; Jiménez; Carrillo; Turrialba; El Hogár; Guápiles; Rio Sísola; Talamanca; La Vijagua; Tenório; San Carlos; Bolsón; Azahár de Cartago; Lagarto; Boruca; Buenos Aires; Pozo Azul de Pirrís; Pozo del Pitál; Paso Real, Boruca) to Panamá (Colón;

<sup>a</sup> Seventeen specimens.

| Locality.                                                      | Wing. | Tall. | Ex-<br>posed<br>culmen. |
|----------------------------------------------------------------|-------|-------|-------------------------|
| MALES.                                                         |       |       |                         |
| Five adult males from Vera Cruz ( <i>P. a. adolphi</i> ).....  | 39.4  | 35.4  | 21.7                    |
| One adult male from Guatemala.....                             | 38    | 35    | .....                   |
| Two adult males from British Honduras.....                     | 37.2  | 36    | 21.2                    |
| Two adult males from Nicaragua.....                            | 37.7  | 36.2  | 22.7                    |
| Ten adult males from Costa Rica.....                           | 37.6  | 33.3  | 21.7                    |
| Two adult males from Panamá.....                               | 38    | 35.5  | 22                      |
| FEMALES.                                                       |       |       |                         |
| Two adult females from Vera Cruz ( <i>P. a. adolphi</i> )..... | 37    | 34    | 21.5                    |
| Four adult females from Guatemala.....                         | 37.4  | 33.7  | 20.7                    |
| Two adult females from Nicaragua.....                          | 37.7  | 34.2  | 21.5                    |
| Ten adult females from Costa Rica.....                         | 38.4  | 34.9  | 21.9                    |
| One adult female from Panamá.....                              | 36    | 34.5  | 20.5                    |

The series examined indicates that at least specimens from southern Honduras, Nicaragua, and Costa Rica require subspecific separation, *P. adolphi* proper being restricted to the birds from southeastern Mexico. Examples from Guatemala and British Honduras are intermediate, but with the small number of specimens available for comparison I am unable to decide whether they are nearer the typical or the southern form. Costa Rican and other southern birds are darker than those from southeastern Mexico, especially the adult males, which have the throat much darker and the chest much duller in color.

Paraiso and Obispo stations; Panamá; Lion Hill; El Chiquito; Santiago de Veragua).

*Phaethornis adolphii* (not of Gould) SCLATER and SALVIN, Ibis, 1859, 126 (Yzabál, Guatemala; habits).—SALVIN and SCLATER, Ibis, 1860, 38 (Yzabál; habits).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 520 (Costa Rica; habits).

*Phaethornis adolphii* SALVIN, Ibis, 1860, 195, 260 (Cobán and Yzabál; habits); 1872, 319 (Chontales, Nicaragua); Proc. Zool. Soc. Lond., 1867, 152 (Santiago de Veragua, Panamá).—SCLATER, Cat. Am. Birds, 1862, 286 (Cobán).—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1864, 365 (Panamá).—BANGS, Auk, xxiv, 1907, 295 (Boruca, Costa Rica).

*Phaethornis adolphii* LAWRENCE, Ann. Lyc. N. Y., vii, 1862, 291 (Lion Hill, Panamá); ix, 1868, 121 (Angostura, Costa Rica).—ELLIOT, Classif. and Synop. Troch., 1879, 18, part (Central America; Panamá).—ZELEDÓN, Cat. Aves de Costa Rica, 1882, 19.—RIDGWAY, Proc. U. S. Nat. Mus., x, 1887, 591 (Rio Segovia, Honduras).—DEARBORN, Pub. 125, Field Mus. N. H., 1907, 96 (Puerto Bárrios, e. Guatemala).

*Phaethornis adolphii* CHERRIE, Anal. Inst. Fis.-Geog. Costa Rica, vi, 1893, 19 (Pozo del Pitál, s. w. Costa Rica).

*P[haethornis] adolphii* HARTERT, Ibis, 1897, 430, part (Central America); Das Tierreich, Troch., 1900, 25, part.

*[Phaethornis] adolphii* SHARPE, Hand-list, ii, 1900, 100, part.

*P[ygmornis] adolphii* CABANIS and HEINE, Mus. Hein., iii, 1860, 7, footnote, part (Central America).

*Pygornis adolphii* GOULD, Introd. Troch., oct. ed., 1861, 47 (Central America).—LAWRENCE, Ann. Lyc. N. Y., ix, 1868, 121 (Angostura, Costa Rica).—FRANTZIUS, Journ. für Orn., 1869, 315 (Costa Rica).—SALVIN and ELLIOT, Ibis, 1873, 271, part (Cobán, Guatemala; Costa Rica; Panamá; crit.).—MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., i, livr. 2, 1873, 102, part; iv, livr. 2, 1877, 144, part; Ann. Soc. Linn. Lyon, xxii, 1876, 201, part.—BOUCARD, Notes quelques Troch., 1873, 2, part (Cobán; habits); Ois. récol. Guat., 1878, 44; Proc. Zool. Soc. Lond., 1878, 67 (San Carlos, Costa Rica; habits; song).—SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 282, part (Cobán; Kamkál, near Cobán; Chontales, Nicaragua; Costa Rica; Santiago de Veragua, Paraiso, and Lion Hill, Panamá), 663 (La Libertad, Chontales, Nicaragua).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 319, part (Central American and Panaman localities and references).—RICHMOND, Proc. U. S. Nat. Mus., xvi, 1893, 516 (Rio Escondido, Nicaragua).—CHERRIE, Expl. Zool. Merid. Costa Rica, 1893, 45 (Lagarto, Boruca, and Buenos Aires, s. w. Costa Rica).—UNDERWOOD, Ibis, 1896, 442 (Miravalles, Costa Rica).

*[Pygmornis] adolphii* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 79, part.

*Pygmornis adolphii* MULSANT and VERREAUX, Classif. Troch., 1866, 19, part.

*Eremita adolphii* BOUCARD, The Hum. Bird, ii, 1892, 84 (Veragua; Panamá); Gen. Hum. Birds, 1895, 392, part (Guatemala; Costa Rica).

*Phaethornis adolphii saturatus* RIDGWAY, Proc. Biol. Soc. Wash., xxiii, April 19, 1910, 54 (El Hogar, e. Costa Rica; coll. E. A. and O. Bangs).

### PHÆTHORNIS STRIGULARIS STRIGULARIS Gould.

#### STRIPE-THROATED HERMIT.

*Adults (sexes alike).*—Above dull metallic bronze-green or greenish bronze, passing into dull blackish brown or dusky on pileum, and into dull chestnut or rusty on rump and upper tail-coverts; rectrices dull metallic bronze-green or bronze, margined terminally with dull



white (more buffy on outer rectrices), the middle pair more broadly tipped with white and brownish gray subterminally; remiges dusky, faintly glossed with violaceous; a supra-auricular stripe of pale brownish buff, extending to immediately above eye, where narrower and more rufescent; loreal, suborbital, and auricular regions plain blackish brown or dusky; an ill-defined malar stripe of pale brownish buff; chin, throat, and chest pale brownish gray, more or less tinged with buffy, the chin and upper throat indistinctly streaked with dusky; rest of under parts cinnamon-buffy, deepening laterally into cinnamon-rufous; bill dull black, the basal half (approximately) of mandible whitish (pink or reddish in life?); iris dark brown; feet dull yellowish or buffy (in dried skins).

*Adult male*.—Length (skins), 100–102 (101); wing, 37–37.5 (37.2); tail, 35–36 (35.5); culmen, 23–23.5 (23.2).<sup>a</sup>

*Adult female*.—Length (skin), 101; wing, 39; tail, 35.5; culmen, 21.5.<sup>b</sup>

Northern and central Colombia (Turbo; La Concepción, Santa Marta; Bogotá); Venezuela (San Esteban).

*Phaethornis striigularis* GOULD, Mon. Troch., pt. viii, Oct., 1854 (vol. i, 1861), pl. 37 (Bogotá, Colombia; coll. J. Gould).—SCLATER, Proc. Zool. Soc. Lond., 1855, 139 (Bogotá, Colombia); Cat. Am. Birds, 1862, 286 (Bogotá, Colombia).—BERLEPSCH, Journ. für Orn., 1887, 316 (Bogotá, Colombia; synonymy); Proc. U. S. Nat. Mus., xi, 1888, 560 (Turbo, n. Colombia).—SIMON, Mém. Soc. Zool. France, ii, 1889, 219 (San Esteban, Venezuela; crit.).

[*Phaethornis*] *striigularis* GRAY, Hand-list, i, 1869, 122, no. 1534.—SHARPE, Hand-list, ii, 1900, 100, part (Colombia).

*P[haethornis] striigularis* HARTERT, Ibis, 1897, 430 (Colombia to Peru).

*Phaethornis striigularis* ELLIOT, Classif. and Synop. Troch., 1879, 19, part (Colombia).—SIMON and DALMAS, Ornith., xi, 1901, 218 (Naranjo, w. Colombia).

*P[ymornis] striigularis* CABANIS and HEINE, Mus. Hein., iii, 1860, 7 (Colombia).

*Pymornis striigularis* GOULD, Introd. Troch., oct. ed., 1861, 48.—SALVIN and ELLIOT, Ibis, 1873, 273, part (Bogotá, Colombia; Rio Napo, e. Ecuador; crit.).—MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., i, livr. ii, 1874, 96; iv, livr. ii, 1877, 144; Ann. Soc. Linn. Lyon, xxii, 1876, 201.—SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 281, part (Bogotá, Colombia).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 321, part (Turbo, Colombia).—BANGS, Proc. Biol. Soc. Wash., xiii, 1899, 93 (La Concepción, Santa Marta, Colombia, 3,000 ft.).

[*Pymornis*] *striigularis* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 79.

*Eremita striigularis*, BOUCAUD, The Hum. Bird, ii, 1892, 84 (Bogotá); v, 1895, 7 (Rio Dagua, n. w. Colombia); Gen. Hum. Birds, 1895, 391.

*Phaethornis* sp.? CASSIN, Proc. Ac. Nat. Sci. Phila., 1860, 194 (Turbo, Colombia).

*Pymornis amaura* BOURCIER, Rev. et Mag. de Zool., 1856, 552.

*Phaethornis amaura* GOULD, Mon. Troch., i, pt. xvii, 1859, pl. 32 (vol. i, 1861).

*P[ymornis] amaura* CABANIS and HEINE, Mus. Hein., iii, 1860, 7.

*Pymornis amaura* GOULD, Introd. Troch., oct. ed., 1861, 46.—HEINE, Journ. für Orn., 1863, 176.

<sup>a</sup> Two specimens.

<sup>b</sup> One specimen.

*Phaethornis adolphi* (not of Gould) RIDGWAY, Proc. U. S. Nat. Mus., iii, 1880, 309, part (Turbo, n. Colombia; see Berlepsch, Proc. U. S. Nat. Mus., xi, 1888, 560).

### Genus GLAUCIS Boie.

*Glaucis* BOIE, Isis, 1831, 545. (Type, *Trochilus hirsutus* Gmelin.)

Medium-sized Trochilidae (length about 100–110 mm.) very similar to *Threnetes* but differing in more strongly decurved, much less depressed (narrower), and relatively longer bill, wholly nude nasal operculum, unicolored under parts, and basal half of rectrices chestnut or rufous instead of white or buff.

Bill rather slender, compressed, scarcely if at all broader than deep basally, distinctly to rather strongly decurved, about twice as long as head, the culmen rounded except for mesorhinal portion, where narrowly ridged; tomia smooth; maxilla and mandible with narrow median grooves. Nostril narrow, slit-like, overhung by a broad, tumid, operculum, feathered only on extreme upper basal portion. Tarsus mostly naked (feathered on upper portion in front), longer than middle toe without claw, the latter slightly longer than both lateral toes; hallux shorter than lateral toes, relatively weak. Wing less than twice as long as exposed culmen, the outermost primary longest. Tail equal to (sometimes longer than) exposed culmen, strongly rounded or nearly graduated, the rectrices narrowly rounded terminally.

*Coloration*.—Above metallic bronze or bronze-green, the pileum dull dusky; rectrices (except middle pair) with basal half rufous or chestnut, then black tipped with whitish; under parts plain grayish brown to cinnamon-rufous. Sexes essentially alike.

*Range*.—Costa Rica to Guiana, Grenada (Lesser Antilles), Brazil, and Ecuador. (Several species.<sup>a</sup>)

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<sup>a</sup> Owing to insufficiency of material I am not able to express an opinion as to the exact number of species which should be recognized; but careful examination of a considerable series (71 specimens) shows that *G. hirsuta* is by no means uniform in characters throughout its range, and that three well-marked forms occur within the geographic limits of this work; namely, (1) a very small form (perhaps specifically distinct), in which (alone) the sexes are apparently always alike in coloration of the under parts and the color of the upper parts always decidedly bronzy, confined to Nicaragua and Costa Rica; (2) a larger form with the adult male always much duller in color of the under parts than the adult female and the upper parts less bronzy, found in Panamá and adjacent parts of South America; and (3) a very large form, essentially like the last in coloration, but more closely resembling (and here not separated from) the smaller true *G. hirsuta* of the adjacent mainland, peculiar to the islands of Trinidad, Tobago, and Grenada.

A very much larger series of specimens from various parts of South America is required for the proper working out of the geographic variations in this species, and the arrangement here given is to be considered as tentative only.

KEY TO THE SUBSPECIES OF *GLAUCIS HIRSUTA*.

*a*. Larger (wing averaging more than 56, tail more than 34, culmen more than 31 mm.; upper parts bronze-green or decidedly greenish bronze; sexes different, the adult females rufescent beneath, adult males dull russet brownish.

*b*. Larger (adult male averaging: Wing 65.1, tail 41.2, culmen 33.3; adult female, wing 61.8, tail 39.5, culmen 33.1); color of under parts slightly browner. (Eastern South America, including islands of Grenada, Tobago, and Trinidad.)

*Glaucis hirsuta hirsuta* (p. 330).

*bb*. Smaller (adult male averaging: Wing 58.6, tail 36.3, culmen 31.3; adult female, wing 56.5, tail 34.9, culmen 31.9); color of under parts slightly more rufescent. (Panamá to the Rio Negro and eastern Peru.)

*Glaucis hirsuta affinis* (p. 333).

*aa*. Smaller (wing less than 54, tail less than 32, culmen less than 31 mm.); upper parts bronze or coppery bronze; sexes alike, the adult male as well as female rufescent beneath. (Eastern Costa Rica and eastern Nicaragua.)

*Glaucis hirsuta ænea* (p. 334).

**GLAUCIS HIRSUTA HIRSUTA** (Gmelin).**HAIRY HERMIT.**

*Adult male*.—Above metallic bronze-green or greenish bronze, duller on pileum, where, especially on forehead and crown, the feathers are dusky basally and on margins, sometimes wholly dusky; upper tail-coverts rather broadly margined terminally with pale buffy grayish or grayish buffy; middle pair of rectrices metallic bronze-green, tipped (usually narrowly) with dull white, the subterminal portion more or less dusky; remaining remiges clear chestnut, crossed by a broad subterminal band of dull black (outer web of lateral rectrix also mostly black), the tip, narrowly, dull white; remiges dusky, faintly glossed with violet-purple; loreal, suborbital, and auricular regions dusky, the last faintly glossed with bronze or bronze-green; under parts dull russet or mars brown (at least on chest), the chin dull whitish, the abdomen pale grayish cinnamon or buffy grayish; under tail-coverts pale cinnamon, becoming still paler on margin, sometimes with an indistinct central area of grayish or olive faintly glossed with bronze-greenish; dusky brown or dull blackish, mandible whitish (pink or reddish in life), passing into dusky at tip; iris dark brown; feet dull yellowish or buffy (in dried skins); length (skins), 109–131 (123); wing, 57.5–68.5 (65.1); tail, 34.5–44.5 (41.2); culmen, 31–35.5 (33.3).<sup>a</sup>

*Adult female*.—Similar to the adult male but under parts wholly and almost uniformly light russet or rusty cinnamon; length (skins),

<sup>a</sup> Fourteen specimens.



111-125 (118);<sup>a</sup> wing, 56-65.5 (61.8); tail, 34.5-41.5 (39.5); culmen, 31-35.5 (33.1).<sup>b</sup>

*Young*.—Similar to adults, but feathers of back, rump, etc., narrowly margined terminally with pale grayish buff or buffy grayish; pileum nearly uniform dusky or sooty, black band across tail and white tips to rectrices broader, and tip of rectrices narrower, more pointed.

Eastern South America, including islands of Grenada, Tobago, and Trinidad.<sup>c</sup>

[*Trochilus*] *hirsutus* GMELIN, Syst. Nat., i, 1788, 490 (based on *Polytmus brasiliensis* Brisson, Orn., ii, 670).

*Trochilus hirsutus* AUDEBERT and VIEILLOT, Ois. Dor., i, 1801, 40, pl. 20.—TEMMINCK, Cat. Syst., 1807, 80.—VIEILLOT, Nouv. Dict. d'Hist. Nat., vii, 1817, 352.—LESSON, Hist. Nat. Colibr., 1830-31, 80, pl. 21 (Brazil); Traité d'Orn., 1830, 290; Index Gen. and Synop. Troch., 1832, p. xiii (Brazil).—JARDINE, Humming Birds, ii, 1833, 155, pl. 29.

[*Trochilus*] *hirsutus* VIEILLOT, Tabl. Enc. Méth., ii, 1822, 556.

[*Glaucis*] *hirsutus* BOIE, Isis, 1831, 545.—GRAY, List Gen. Birds, 1841, 17.—BONAPARTE, Consp. Av., i, 1850, 67; Rev. et Mag. de Zool., 1854; 249.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 78, part.

*Glaucis hirsutus* Mulsant and Verreaux, Hist. Nat. Ois.-Mouch., i, livr. 1, 1873, 39, part (Cayenne; Trinidad; Tobago).—LAWRENCE, Proc. U. S. Nat. Mus., i, 1879, 266, 271, 487 (Grenada).—WELLS, Proc. U. S. Nat. Mus., ix, 1887, 619 (Grenada; descr. nest and eggs).—CHAPMAN, Bull. Am. Mus. N. H., vi, 1894, 54 (Trinidad; habits).—PHELPS, Auk, xiv, 1897, 366 (Cumanacoa and San Antonio, Venezuela).—ROBINSON and RICHMOND, Proc. U. S. Nat. Mus., xxiv, 1901, 171 (La Guayra, and San Julian, Venezuela).

*Glaucis hirsuta* REICHENBACH, Aufz. der Colibr., 1854, 15; Troch. Enum., 1855, 12.—BURMEISTER, Syst. Ueb. Th. Bras., ii 1856, 321.—GOULD, Mon. Troch., pt. xi, 1856 (vol. i, 1861), pl. 5; Introd. Troch., oct. ed., 1861, 38 (e. Brazil);

<sup>a</sup> Two specimens.

<sup>b</sup> Eleven specimens.

| Locality.                                            | Wing. | Tail. | Ex-<br>posed<br>culmen. |
|------------------------------------------------------|-------|-------|-------------------------|
| MALES.                                               |       |       |                         |
| Two adult males from Brazil (Bahia and Chapada)..... | 63.2  | 40    | 31.2                    |
| Two adult males from Venezuela.....                  | 63.2  | 40    | 32                      |
| Five adult males from Trinidad.....                  | 63.8  | 39.9  | 32.4                    |
| Two adult males from Tobago.....                     | 68    | 44.2  | 33.7                    |
| Five adult males from Grenada.....                   | 66    | 41.8  | 34.9                    |
| FEMALES.                                             |       |       |                         |
| Two adult females from Brazil (Bahia).....           | 65.2  | 40.7  | 31.7                    |
| One adult female from Venezuela.....                 | 57.5  | 33    | 31                      |
| Three adult females from Trinidad.....               | 60.3  | 37.2  | 32.2                    |
| One adult female from Tobago.....                    | 65    | 44.5  | 34                      |
| Five adult females from Grenada.....                 | 60.6  | 37.3  | 33.8                    |

<sup>c</sup> Specimens examined are from Brazil (Bahia; Chapada, Matto Grosso), Cayenne, Venezuela (San Antonio, Bermudez; Merida), Trinidad, Tobago, and Grenada.

- Venezuela; Trinidad).—PELZELN, Orn. Bras., i, Abth., 1868, 27; iv, Abth., 1870, 406.—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1868, 628 (Venezuela).—BOUCARD, Notes quelques Troch., 1873, 1 (Brazil; Trinidad); Gen. Hum. Birds, 1895, 516 (Brazil; Trinidad; Grenada).—SALVIN and ELLIOT, Ibis, 1873, 276, part (Bahia, etc., Brazil; Trinidad; Merida and Caracas, Venezuela).—LAYARD, Ibis, 1873, 388 (Pará, Brazil).—ELLIOT, Classif. and Synop. Troch., 1879, 6, part (Tobago; Trinidad; Brazil).—RIDGWAY, Proc. U. S. Nat. Mus., iii, 1880, 308, part (Grenada; Brazil).—SALVIN, Ibis, 1885, 431 (Roraima, Brit. Guiana, 3,500 ft.).—CORY, Auk, 1886, 347 (Grenada); Birds West Ind., 1889, 142 (Grenada); Cat. West Ind. Birds, 1892, 106 (Grenada).—ALLEN, Bull. Am. Mus. N. H., ii, 1889, 257 (concerning type of *Trochilus ferrugineus* Maximilian); v, 1893, 122 (Chapada, Matto Grosso, Brazil).—SIMON, Mém. Soc. Zool. France, ii, 1889, 218 (San Esteban, Venezuela).—SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 41, part (Caracas, Venezuela; Roraima, Brit. Guiana; Cayenne; Trinidad; Tobago; Grenada; Pará, etc., Brazil).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 255, part.—LODGE, Ibis, 1896, 518 (Grenada; habits).—HARTERT, Ibis, 1897, 423, part (crit.).—IHERING, Rev. Mus. Paul., iv, 1900, 70 (descr. nest and eggs).—DALMAS, Mém. Soc. Zool. France, xiii, 1900, 142 (Tobago).—BERLEPSCH and HARTERT, Novit. Zool., ix, 1902, 80 (Munduapo, Tembladór, and La Pricion, Venezuela).—IHERING, Rev. Mus. Paul., vi, 1904, 357 (São Sebastião, São Paulo, s. e. Brazil).—NICHOLL, Ibis, 1904, 565 (Grand Étang, Grenada; habits).—MENECAUX, Bull. Mus. d'Hist. Nat. Paris, 1904, 113 (Mahury, Cayenne).—CLARK (A. H.), Proc. Bost. Soc. N. H., xxxii, 1905, 273 (Grenada).—HELLMAYR, Novit. Zool., xiii, 1906, 374 (near Pará, Brazil; crit.).—BERLEPSCH, Novit. Zool., xv, 1908, 261 (Cayenne).
- Glaucis hirsuta* CABANIS and HEINE, Mus. Hein., iii, 1860, 4 (Caracas, Venezuela; Brazil).—HARTERT, Das Tierreich, Troch., 1900, 15, part.
- [*Glaucis hirsuta* CORY, List Birds West Ind., 1885, 17 (Grenada).—SHARPE, Hand-list, ii, 1900, 98, part.
- Glaucis hirsuta hirsuta* OBERHOLSER, Proc. U. S. Nat. Mus., xxiv, Jan., 1902, 311, in text.
- P[hæthornis] hirsutus* JARDINE, Hum. Birds, ii, 1833, 177.
- Phæthornis hirsutus* JARDINE and SELBY, Illustr. Orn., iii, 1835, pl. 143 (Tobago).
- Phaethornis hirsutus* JARDINE, Ann. and Mag. N. H., xx, 1847, 372 (Tobago; Trinidad).
- P[olytmus] hirsutus* GRAY, Gen. Birds, i, Dec., 1848, 108.
- [*Polytmus] hirsutus* GRAY, Hand-list, i, 1869, 126, no. 1590.
- Polytmus hirsutus* LÉOTAUD, Ois. Trinidad, 1866, 139.
- [*Trochilus] brasiliensis* LATHAM, Index Orn., i, 1790, 308 (= *Trochilus hirsutus* Gmelin).
- Trochilus brasiliensis* VIEILLOT, Nouv. Dict. d'Hist. Nat., vii, 1817, 357 (Brazil; Cayenne).—MAXIMILIAN, Beitr. Naturg. Bras., iv, 1831, 111.—CABANIS, in Schomburgk's Reis. Brit. Guiana, iii, 1848, 708.—BURMEISTER, Syst. Ueb. Th. Bras., ii, 1856, 327.
- Trochilus ferrugineus* MAXIMILIAN, Beitr. Naturg. Bras., iv, pt. ii, 1832, 120 (s. e. Brazil; type now in coll. Am. Mus. N. H.; see Allen, Bull. Am. Mus. N. H. ii, 1889, 257).
- T[trochilus] dominicus* (not of Linnæus) LICHTENSTEIN, Verz. Doubl., 1823, 13 (Brazil).
- Trochilus dominicus* CABANIS, in Schomburgk's Reis. Brit. Guiana, iii, 1848, 708.
- Trochilus superciliosus* (not of Linnæus) LESSON, Hist. Nat. Col., 1831, 38, pl. 7; Traité d'Orn., 1830, 289.—JARDINE, Hum. Birds, ii, 1833, 145, part, pl. 27.—BURMEISTER, Syst. Ueb. Th. Bras., ii, 1856, 324.

- Trochilus mazepa* LESSON, Hist. Nat. Col., 1831, 18, pl. 3 (Guiana); Index Gen. and Syn. Troch., 1832, p. xiii (Cayenne).—JARDINE, Hum. Birds, ii, 1833, 156.  
 [*Glaucis*] *mazepa* REICHENBACH, Aufz. der Colibr., 1854, 15; Troch. Enum., 1855, 12.—BONAPARTE, Rev. et Mag. de Zool., 1854, 249.  
*Glaucis mazepa* GOULD, Mon. Troch., pt. xxiv (vol. i, 1861), pl. 6; Introd. Troch., oct. ed., 1861, 38 (Cayenne; Trinidad; Tobago).—TAYLOR, Ibis, 1864, 90 (Trinidad).—BOUCARD, Gen. Hum. Birds, v, 1895, 363 (Tobago; Guiana; Brazil).  
 [*Glaucis hirsutus*] var. *mazepa* Mulsant, Ann. Soc. Linn. Lyon, n. s., xxii, 1876, 200.  
*Polytmus mazepa* GRAY, Gen. Birds, i, Dec., 1848, 108.  
 [*Polytmus*] *mazepa* GRAY, Hand-list, i, 1869, 126, no. 1591.  
*P[haethornis] mazepa* JARDINE, Hum. Birds, ii, 1833, 178.  
*Glaucis lanceolata* GOULD, Mon. Troch., pt. xxiv, Sept. 1, 1861, pl. 8 (Parí, lower Amazon; coll. J. Gould); Introd. Troch., oct. ed., 1861, 39.  
 [*Glaucis hirsutus*] var. *lanceolatus* Mulsant, Ann. Soc. Linn. Lyon, n. s., xxii, 1876, 200.

### GLAUCIS HIRSUTA AFFINIS (Lawrence).

#### LESSER HAIRY HERMIT.

Similar to *G. h. hirsuta* but decidedly smaller, and color of under parts averaging duller (more rufescent).

*Adult male*.—Length (skins), 101–121 (111)<sup>a</sup>; wing, 53–61.5 (58.6); tail, 32.5–39 (36.3); culmen, 30.5–31.5 (31.3).<sup>b</sup>

*Adult female*.—Length (skins), 109<sup>c</sup>; wing, 56–57 (56.5); tail, 34–36 (34.9); culmen, 30–33 (31.9).<sup>b</sup>

Panamá (Lion Hill; Chepo; Panamá) and southward through Colombia (Bogotá; lower Magdalena; Medina; Santa Elena; Don Diego, Santa Marta; Rio Cali; Rio Dagua), and eastern Ecuador (Rio Napo) to Rio Negro and eastern Peru (Pebas; upper Ucayali; Santa Cruz; Yurimáguas; Chyavetas; Chamicuros).

| <i>a</i> Three specimens.                       | <i>b</i> Four specimens. | <i>c</i> One specimen. |         |
|-------------------------------------------------|--------------------------|------------------------|---------|
| Locality.                                       | Wing.                    | Tail.                  | Culmen. |
| MALES.                                          |                          |                        |         |
| Three adult males from Panamá.....              | 57.5                     | 36                     | 31.2    |
| Four adult males from Colombia.....             | 60.5                     | 37.5                   | 31.5    |
| One adult male from eastern Ecuador (Napo)..... | 53                       | 32.5                   | 31.5    |
| One adult male from eastern Peru (Pebas).....   | 60.5                     | 36.5                   | 30.5    |
| FEMALES.                                        |                          |                        |         |
| One adult female from Panamá.....               | 56                       | 36                     | 33      |
| Two adult females from Colombia.....            | 57                       | 34.5                   | 32.2    |
| One adult female from Rio Negro.....            | 56                       | 34                     | 30      |



- Glaucis hirsuta* (not *Trochilus hirsutus* Gmelin) MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., i, livr. 1, 1873, 39, part (Colombia).—SALVIN and ELLIOT, Ibis, 1873, 276, part (Pebas and Xeberos, e. Peru; Bogotá, Colombia; Barro do Rio Negro?; Panamá).—ELLIOT, Classif. and Synop. Troch., 1879, 6, part.—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1879, 528 (Santa Elena, Colombia).—RIDGWAY, Proc. U. S. Nat. Mus., iii, 1880, 308, part (Pebas; Panamá).—BERLEPSCH, Journ. für Orn., 1887, 314 (Bogotá).—SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 41, part (Lion Hill, etc., Panamá; Santa Elena, Bogotá, and Medina, Colombia; Barro do Rio Negro?; Rio Javari, Iquitos, Pebas, etc., e. Peru; Rio Napo, e. Ecuador).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 255, part (Lion Hill and Chepo, Panamá).—BANGS, Proc. Biol. Soc. Wash., xii, 1898, 134 (Santa Marta).—IHERING, Rev. Mus. Paul., iv, 1904, 357, part (Bogotá).—ALLEN, Bull. Am. Mus. N. H., xvi, 1905, 276 (Don Diego, Santa Marta, Colombia; 281 (Don Diego; descr. nest and eggs).—(?) HELLMAYER, Novit. Zool., xiv, 1907, 392 (Humaytha and Borba, Rio Madeira, w. Brazil).
- G[laucis] hirsuta* HARTERT, Das Tierreich, Troch., 1900, 15, part.
- [*Glaucis*] *hirsuta* SHARPE, Hand-list, ii, 1900, 98, part.
- [*Glaucis*] *hirsutus* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 78, part.
- Glaucis hirsutus* TACZANOWSKI, Orn. du Pérou, i, 1884, 261.
- Glaucis affinis* LAWRENCE, Ann. Lyc. Nat. Hist. N. Y., vi, 1858, 261, 262 (Ecuador; coll. G. N. Lawrence).—GOULD, Mon. Troch., i, 1861, pl. 7; Introd. Troch., oct. ed., 1861, 38 (Bogotá).—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1864, 364 (Panamá); 1873, 286 (Yurimaguas, Xeberos, Chyavetas, Chamicuros, and Pebas, e. Peru).
- [*Glaucis hirsutus*] var. *affinis* MULSANT, Ann. Soc. Linn. Lyon, n. s., xxii, 1876, 200.
- Glaucis hirsuta affinis* OBERHOLSER, Proc. U. S. Nat. Mus., xxiv, no. 1258, Jan., 1902, 311 (Napo, e. Ecuador; crit.).
- [*Polytmus*] *affinis* GRAY, Hand-list, i, 1869, 126, no. 1592.
- Glaucis melanura* GOULD, Proc. Zool. Soc. Lond., 1860, 304 (upper Rio Negro; Rio Napo, e. Ecuador; coll. J. Gould); Mon. Troch., i, 1861, pl. 9; Introd. Troch., oct. ed., 1861, 39.—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1866, 193 (upper Ucayali, e. Peru); 1873, 286 (upper Ucayali).
- [*Glaucis hirsutus*] var. *melanura* MULSANT, Ann. Soc. Linn. Lyon, n. s., xxii, 1876, 200.
- [*Polytmus*] *melanura* GRAY, Hand-list, i, 1869, 126, no. 1595.
- Glaucis ænea* (not *Glaucis æneus* Lawrence) BOUCARD, The Hum. Bird, ii, 1892, 84 (Bogotá, Colombia); v, 1895, 7 (Cali, Colombia); Gen. Hum. Birds, 1895, 365, part (Panamá; Colombia; upper Amazons; Ecuador).
- (?) *Glaucis columbiana* BOUCARD, The Hum. Bird, v, 1895, 7 (Rio Dagua, n. w. Colombia; nomen nudum here); v, Dec., 1895, 402 (Rio Dagua, n. w. Colombia; coll. A. Boucard).—HARTERT, Ibis, 1897, 423 (crit.).
- (?) *G[laucis] columbiana* HARTERT, Das Tierreich, Troch., 1900, 16.

### GLAUCIS HIRSUTA ÆNEA (Lawrence).

#### BRONZY HERMIT.

Somewhat like *G. h. hirsuta* but much smaller (smaller even than *G. h. affinis*), the upper surface always metallic bronze or copper-bronze (never green or bronze-green), and under parts (in both sexes) much more rufescent.

*Adult male*.—Above metallic bronze (varying from copper-bronze to slightly greenish bronze), except pileum, which is uniform dusky; upper tail-coverts broadly margined with cinnamon or (sometimes) with pale buffy grayish on longer coverts; middle pair of rectrices metallic greenish bronze or bronze-green, tipped with white or pale grayish buff, and crossed by a narrow subterminal band of black; other rectrices clear chestnut or rufous-chestnut, broadly tipped with white and crossed by a broad subterminal band of black, the outer web of lateral rectrix also mostly black; remiges dusky, faintly glossed with violaceous; chin pale grayish cinnamon or dull buffy whitish; throat, chest, sides, flanks, and under tail-coverts light russet or rusty cinnamon, fading on breast and abdomen into pale grayish buffy; maxilla dull black, mandible dusky terminally, paler (sometimes dull whitish) basally; iris dark brown; feet dull yellowish or buffy (in dried skins); length (skins), 95–104 (101); wing, 50.5–56 (53.6); tail, 30–34 (31.7); culmen, 30–31.5 (30.6).<sup>a</sup>

*Adult female*.—Similar to the adult male, but under parts almost wholly and nearly uniformly light russet or rusty cinnamon; length (skins), 94–105 (97); wing, 51–54 (52.4); tail, 29.5–33 (31.3); culmen, 30–31.5 (30.7).<sup>b</sup>

Costa Rica (San José; Talamanca; Rio Frio; El Hogár; Pozo Azul de Pirrís; Pozo del Rio Grande; El Pozo de Térraba) and Nicaragua (Rio Escondido).

*Glaucis æneus* LAWRENCE, Proc. Ac. Nat. Sci. Phila., 1867, 232 (Costa Rica coll. U. S. Nat. Mus.); Ann. Lyc. N. Y., ix, 1868, 121 (Costa Rica).—FRANTZIUS, Journ. für Orn., 1869, 315 (Costa Rica).

*Glaucis aenea* BOUCARD, Gen. Hum. Birds, 1895, 365, part (Costa Rica).

[*Glaucis hirsutus*] var. *aeneus* MULSANT, Ann. Soc. Linn. Lyon, n. s., xxii, 1876, 200.

*Glaucis hirsuta æneus* BANGS, Auk, xxiv, July, 1907, 288, 295 (Pozo del Rio Grande, s. w. Costa Rica; crit.).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 518 (Costa Rica; crit.; habits).

*Glaucis hirsuta* (not *Trochilus hirsutus* Gmelin) SALVIN and ELLIOT, Ibis, 1873, 273, part (Costa Rica; synon.; crit.).—RIDGWAY, Proc. U. S. Nat. Mus., iii, 1880, 308, part (Costa Rica).—ELLIOT, Classif. and Synop. Troch., 1879, 6, part (Costa Rica).—ZELEDÓN, Cat. Aves de Costa Rica, 1882, 19; Anal. Mus. Nac. Costa Rica, i, 1887, 121 (Pozo Azul de Pirrís, s. w. Costa Rica).—SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 41, 655, part (Costa Rica).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, i, 1892, 255, part (Costa Rica).—RICHMOND, Proc. Zool. Soc. Lond., xvi, 1893, 516 (Rio Escondido, e. Nicaragua).—HARTERT, Ibis, 1897, 423, part (crit.).

[*Glaucis*] *hirsutus* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 78, part.

*Glaucis hirsuta* HARTERT, Das Tierreich, Troch., 1900, 15, part (monogr.).

[*Glaucis*] *hirsuta* SHARPE, Hand-list, ii, 1900, 98, part.

<sup>a</sup> Six specimens.

<sup>b</sup> Five specimens.

Genus **THRENETES** Gould.

*Threnetes* <sup>a</sup> GOULD, Mon. Troch., pt. iv, Oct., 1852, pl. 13; Introd. Troch., oct. ed., 1861, 40. (Type, *Trochilus leucurus* Linnæus.)

*Dnophera* <sup>b</sup> HEINE, Journ. für Orn., 1863, 175, in text. (Type, *Trochilus antoniæ* Bourcier and Mulsant.)

Medium-sized Trochilidæ (length about 110–120 mm.) with the long, rather stout, depressed and distinctly decurved bill less than twice as long as head, tail more than half as long as wing, graduated, with rectrices more or less subacuminate terminally, the rectrices (except middle pair) white or buff basally.

Bill rather stout, much broader than deep basally, distinctly (though not conspicuously) decurved, less than twice as long as head, the culmen distinctly ridged, at least basally, where constricted and elevated into a rather conspicuous narrow ridge; mandible grooved laterally for basal half or more. Nostril narrow, slit-like, overhung by a broad, tumid, mostly unfeathered operculum, but frontal feathering extending, in a narrow line, nearly to its anterior end; unfeathered inter-ramal space long and broad. Tarsus naked, about as long as middle toe without claw, the latter about equal to inner toe, the outer toe slightly shorter; hallux slightly shorter than outer toe. Wing about twice as long (more or less) as exposed culmen, the outermost primary longest. Tail longer than exposed culmen, decidedly more than half as long as wing, graduated, with rectrices distinctly cuneate or subacuminate at tip or (in *T. cervinicauda*) moderately rounded with rectrices broadly rounded terminally.

*Coloration*.—Rather dull metallic bronze-green or bronze above, the rectrices (except middle pair) abruptly white for basal half (more or less), then blackish, the tip whitish, or (in *T. cervinicauda*) buff with or without dusky at tip; chin and upper throat black or dusky, lower throat buff or tawny, under parts of body dull grayish (chest dull metallic green in *T. cervinicauda*). Sexes nearly alike, but females duller in color.

*Range*.—Guatemala to Guiana and Bolivia, mostly in lowlands. (Five species.)

**THRENETES RUCKERI** (Bourcier).**RUCKER'S HERMIT.**

*Adults (sexes alike)*.—Above metallic bronze-green or greenish bronze, duller on pileum, where feathers are narrowly margined with dusky and with a dusky shaft-streak; upper tail-coverts margined terminally with pale cinnamon or pale grayish buffy, this bordered anteriorly by a narrow curved line of dusky; middle pair of rectrices

<sup>a</sup> "Θρηνητής, a mourner."

<sup>b</sup> "Von dunkel, finster." (Heine.)



bronze-green, tipped with dull white or pale buffy, the other rectrices white for basal half (more or less), then dull black, glossed on outer web with bronze-green, the tip white or pale buffy; remiges dusky, faintly glossed with violaceous; suborbital and auricular regions blackish brown or dusky, margined above by a postocular spot or short stripe of pale cinnamon or buffy and below by a malar stripe of the same; chin and upper throat dusky, the feathers margined or tipped with grayish buffy or pale cinnamon; lower throat and upper chest cinnamon-rufous, changing gradually to pale buffy grayish on lower chest, breast, and abdomen (the last tinged with cinnamon-rufous), the sides and flanks deeper buffy grayish, more or less tinged (especially the flanks) with pale cinnamon-rufous; under tail-coverts olive-bronze, broadly margined with cinnamon or cinnamon-buff; maxilla dull black, mandible whitish (pink or reddish in life?), passing into dusky at tip; iris dark brown; feet pale brownish or dull yellowish (in dried skins).

*Young (first plumage).*—Essentially like adults but lower throat and chest dull buffy grayish instead of tawny, and feathers of upper surface narrowly margined terminally with dull brownish buffy.

*Adult male.*—Length (skins), 107–120 (113); wing, 52.5–60 (57.7); tail, 31–38 (34.4); culmen, 28–31 (30.5).<sup>a</sup>

*Adult female.*—Length (skins), 101–116 (108); wing, 52–57.5 (54.4); tail, 31–35.5 (32.9); culmen, 26.5–32 (29.7).<sup>b</sup>

Nicaragua (Rio Escondido), Costa Rica (Angostura; Jiménez; El Hogár; Carrillo; Guácimo; Turrialba, 2,000 feet; Guápiles; Cuábre; Talamanca; Pozo Azul de Pirrís; Pozo del Rio Grande) and Panamá (Lion Hill; Panamá; Paraiso; Bibaláz; Mina de Chorchá; Verágua); northwestern Colombia (Rio Dagua)?; Guatemala?

*Troch[ilus] ruckeri* BOURCIER, Proc. Zool. Soc. Lond., 1847, 46 (locality unknown; coll. M. Loddiges).

*Glaucis ruckeri* GOULD, Mon. Troch., i, Nov., 1851, pl. 11; Introd. Troch., oct. ed., 1861, 39 (Verágua, Panamá).—LAWRENCE, Ann. Lyc. N. Y., vii, 1862, 319 (Lion Hill, Panamá); ix, 1868, 121 (Costa Rica).—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1864, 364 (Lion Hill).—MULSANT and VERREAUX, Classif. Troch., 1866, 14; Hist. Nat. Ois.; Mouch., i, livr. 1, 1873, 47, part (Verágua).—SALVIN, Proc. Zool. Soc. Lond., 1870, 204 (Mina de Chorchá, Panamá).—FRANTZIUS, Journ. für Orn., 1869, 315 (Costa Rica).—ELLIOT, Classif. and Synop. Troch., 1879, 8, part ("Central America").—RIDGWAY, Proc. U. S. Nat. Mus., iii, 1880, 308 (Panamá; Costa Rica).—ZELEDÓN, Cat. Aves de Costa Rica, 1882, 19; Anal. Mus. Nac. Costa Rica, i, 1887, 121 (Angostura and Jiménez, Costa Rica).

*G[laucis] ruckeri* CABANIS and HEINE, Mus. Hein., iii, 1860, 4, footnote (Verágua).

*P[olytmus] ruckeri* GRAY, Gen. Birds, i, Dec., 1848, 108.

*[Polytmus] ruckeri* GRAY, Hand-list, i, 1869, 126, no. 1573.

<sup>a</sup> Thirteen specimens.

<sup>b</sup> Eleven specimens.

- Threnetes ruckeri* REICHENBACH, Aufz. der Colibr., 1854, 15; Troch. Enum., 1855, 12.—BONAPARTE, Rev. et Mag. de Zool., 1854, 249; Ibis, 1873, 428 (Guatemala).—SALVIN and ELLIOT, Ibis, 1873, 278, part (Costa Rica; Panamá; synon.; crit.).—MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., i, livr. I, 1873, 47.—MULSANT, Ann. Soc. Linn. Lyon, xxii, 1875, 200.—SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 265 (Guatemala; Angostura, Costa Rica; Mina de Chorchá, Paraiso, and Lion Hill, Panamá).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 316.—BOUCARD, The Hum. Bird, ii, 1892, 84 (Veragua); Gen. Hum. Birds, 1895, 371, part (Veragua).—RICHMOND, Proc. U. S. Nat. Mus., xvi, 1893, 516 (Rio Escondido, Nicaragua).—BANGS, Auk, xxiv, 1907, 295 (Pozo del Rio Grande, Costa Rica).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 518 (Caribbean lowlands of Costa Rica; habits; descr. nest and eggs).
- [*Threnetes*] *ruckeri* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 79.—SHARPE, Hand-list, ii, 1900, 98 (Panamá; Costa Rica; Guatemala).
- T[hrenetes] ruckeri* HARTERT, Das Tierreich, Troch., 1900, 14 (monogr.).
- (?) *Threnetes ruckeri* BOUCARD, The Hum. Bird, v, 1895, 7 (Rio Dagua, n. w. Colombia).

### Genus *AITHURUS* Cabanis and Heine.

- Polytmus* (not *Polytmus* Brisson) LESSON, Tabl. Esp. Ois.-Mouch., 1829, p. xviii. (Type, *Trochilus polytmus* Linnæus.)
- Polytmus* (not of Brisson) REICHENBACH, Av. Syst. Nat., 1849, pl. 39. (Type, *Trochilus polytmus* Linnæus.)
- Aithurus* <sup>a</sup> CABANIS and HEINE, Mus. Hein., iii, March, 1860, 50. (Type, *Trochilus polytmus* Linnæus.)
- Aethurus* (emendation) SIMON, Cat. Troch., 1897, 24.

Medium-sized Trochilidæ (length, not including elongated rectrices, about 100 mm.) with outermost (tenth) primary shorter than the next,<sup>b</sup> nasal operculi nude, and tail about two-thirds as long as wing, double-rounded in female but in male forked and with the next to outermost pair of rectrices excessively elongated; adult male with a crest on each side of occiput, top and sides of head (including crests) together with tail black, back, etc., and under parts metallic green; the female dull white below, and lateral rectrices broadly tipped with whitish.

Bill a little longer than head, broad and depressed basally, faintly decurved; culmen rounded anteriorly, posteriorly contracted into a ridge, especially on mesorhinal portion (ridged only at extreme base in females); tomia smooth throughout; mandible with a broad longitudinal groove above middle portion. Nasal operculum rather narrow, moderately tumid, nude except for upper-posterior portion, the frontal feathering extending to about its middle portion with a narrowly convex or nearly truncate anterior outline. Tarsus very stout, feathered on upper-anterior portion; lateral toe about equal

<sup>a</sup> "Von *ἀετ* *Δουρος* (stets kampflustig)." (Cabanis and Heine.)

<sup>b</sup> *Aithurus* is the only genus in the entire family in which the tenth primary is shorter than the ninth, except *Goldmania* (adult male, see p. 452.)

in length, slightly shorter than middle toe, the hallux shorter than lateral toes. Wing, about three times as long as exposed culmen, the ninth (next to outermost) primary longest. Tail about two-thirds as long as wing, in adult male forked and with the next to outermost pair of rectrices excessively elongated, in adult female double-rounded, with lateral rectrices shorter than middle pair. Adult males with a conspicuous crest on each side of occiput.

*Coloration*.—Adult male with top and sides of head, including crests, together with tail, black; rest of plumage metallic green, brighter on under parts; adult female metallic green or bronze-green above (including middle rectrices), dull white beneath, spotted with green laterally.

*Range*.—Island of Jamaica. (Two species.)

#### KEY TO THE SPECIES OF AITHURUS.

- a. Bill with at least greater part of mandible pale brownish or yellowish (red or pink in life); adult male with under parts purer (less yellowish) green. (Southern slope of Jamaica.).....*Aithurus polytmus* (p. 339).
- a. Bill wholly black (in both sexes); adult male with under parts more yellowish green. (Northern slope of Jamaica.).....*Aithurus scitulus* (p. 341).

#### AITHURUS POLYTMUS (Linnæus).

##### STREAMER-TAILED HUMMING BIRD.

*Adult male*.—Pileum dull black or blue-black; occiput and nuchal crest deep velvety black; back, scapulars, wing-coverts, rump, and upper tail-coverts bright metallic green, bronze-green, or greenish bronze; tail (including elongated rectrices) black, the middle pair of rectrices more or less strongly glossed with bronze-green or greenish bronze, the other rectrices sometimes similarly but less strongly glossed, at least basally; primaries dark brownish slate or dusky, glossed with purplish bronze; secondaries darker (nearly black), faintly glossed with violaceous, the innermost ones with outer web mostly metallic green or bronze-green; malar region, sides of neck, and under parts (except under tail-coverts) luminous metallic yellowish green (nearest apple green, but much purer in hue); under tail-coverts and under surface of tail blue-black or black faintly glossed with bluish; bill pale brownish or dull yellowish (pink or red in life), dusky at tip; iris dark brown; feet dusky; length (skins), including elongated rectrices, 211–256 (234); wing, 64.5–68.5 (66.4), tail (elongated second rectrix), 152–184 (167.5); middle rectrices 28–32 (29.9); culmen, 20–21.5 (20.6).<sup>a</sup>

*Immature male*.—Similar to the adult male, but without elongated rectrices; rectrices tipped with bronze-green or greenish bronze, and under tail-coverts strongly glossed with greenish bronze.

<sup>a</sup> Ten specimens.



*Young male (nestling).*—Essentially like immature males, but coloration duller, the under parts rather dull metallic bronze-green (like upper parts), the pileum and nape dusky, faintly glossed with bronze-green (no nuchal crest).

*Adult female.*—Above bright metallic bronze-green or greenish bronze, becoming much duller on pileum, where the green or bronze is confined to a terminal spot on each feather, the remaining portion being grayish dusky; middle pair of rectrices bright bronze-green or greenish bronze, the other rectrices black, more or less glossed with bronze-green on basal portion of outer web, the two outermost (on each side) extensively tipped with white; remiges dusky, faintly glossed with bronzy purple, the innermost secondaries with outer webs more or less extensively metallic bronze-green (mostly on terminal portion); primary coverts dusky, glossed on outer web with bluish green; loreal and auricular regions grayish dusky; malar region and under parts white, the sides, flanks, sides of neck and chest heavily spotted with metallic bronze-green or greenish bronze, the sides of throat sometimes with similar but smaller spots; maxilla dusky, sometimes becoming brownish (dull reddish in life?) basally; mandible pale brownish or dull yellowish (pink or reddish in life), passing into dusky terminally; iris dark brown; feet dusky; length (skins), 97–112 (105); wing, 54.5–58 (56.9); tail, 35.5–40 (37.6), middle rectrices, 30–33.5 (31.4); culmen, 19–21.5 (21).<sup>a</sup>

Southern slope, island of Jamaica (vicinity of Kingston; Cinchona, 5,000 feet; Spanishtown; Hope Gardens, 700 feet; Flanstead; Moneague; Port Henderson); accidental or occasional on northern slope (Priestmans River).

[*Trochilus*] *polytmus* LINNÆUS, Syst. Nat., ed. 10, i, 1758, 120 (based on *Polytmus viridans* Brown, Jamaica, 145; *Long-tailed Black-cap Humming Bird, Avis mellivora, macroura, capite nigro*, Edwards, Nat. Hist., i, pl. 34); ed. 12, i, 1766, 189.—GMELIN, Syst. Nat., i, pt. 1, 1788, 486.—LATHAM, Index Orn., i, 1790, 302.

*T[rochilus] polytmus* VIEILLOT, Tab. Enc. Méth., ii, 1822, 554.

*Trochilus polytmus* VIEILLOT, Nouv. Dict., d'Hist. Nat., vii, 1817, 355.—GOSSE, Birds Jamaica, 1847, 97; Illustr. Birds Jam., 1849, pls. 19, 20.—GOULD, Mon. Troch., ii, 1849, pl. 98.

*A[ithurus] polytmus* CABANIS and HEINE, Mus. Hein., iii, March, 1860, 50.—HEINE, Journ. für Orn., 1863, 205.—NEWTON, Handb. Jamaica, 1881, 108.—HARTERT, Das Tierreich, Troch., 1900, 106 (monogr.).

*Aithurus polytmus* GOULD, Introd. Troch., oct. ed., 1861, 75.—SCLATER, Cat. Am. Birds, 1862, 293.—MARCH, Proc. Ac. Nat. Sci. Phila., 1863, 284.—ELLIOT, Ibis, 1872, 353 (synon.; crit.); Classif. and Synop. Troch., 1879, 96.—MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., i, livr. 4, 1874, 335; iv, livr. 3, 1878, 185.—CORY, Auk, iii, 1886, 352; Birds West Ind., 1889, 147; Cat. West Ind. Birds, 1892, 13, 106, 130.—SCOTT, Auk, ix, 1892, 277, part.—SALVIN, Cat.

<sup>a</sup> Ten specimens.

- Birds Brit. Mus., xvi, 1892, 64.—FIELD, Auk, xi, 1894, 125 (Port Henderson, Jamaica).—ROTHSCHILD, Ibis, 1894, 547 (crit.).—BOUCARD, Gen. Hum. Birds, 1895, 168.—LODGE, Ibis, 1896, 496 (habits).
- [*Aithurus*] *polytmus* GRAY, Hand-list, i, 1869, 134, no. 1717.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 82.—CORY, List Birds West Ind., 1885, 17.—SHARPE, Hand-list, ii, 1900, 120.
- Aiturus polytmus* BOUCARD, Notes quelques Troch., 1873, 15.
- Aiturus polytmus* Mulsant and Verreaux, Hist. Nat. Ois.-Mouch., i, livr. 3, 1874, pl. 13.
- Ayturus polytmus* HARTERT, Kat. Vogelsamml. Mus. Senckenb., 1891, 115.
- Ornismya cephalatra* LESSON, Hist. Nat. Ois.-Mouch., 1829, pp. xviii, 78, pl. 17; Index Gen. and Synop. Troch., 1832, p. xvi.
- [*Polytmus*] *cephalatra* BONAPARTE, Consp. Av., i, 1850, 72.
- Polytmus cephalatra* BONAPARTE, Rev. et Mag. de Zool., 1854, 354.
- Polytmus cephalater* SCLATER, Proc. Zool. Soc. Lond., 1861, 79.—ALBRECHT, Journ. für Orn., 1862, 201.—Mulsant and Verreaux, Classif. Troch., 1866, 36.
- Trochilus maria* GOSSE, Ann. and Mag. N. H., iii, 1849, 258.—GOSSE, Illustr. Birds Jam., 1849, pl. 22.
- Aithurus fuliginosus* MARCH, Proc. Ac. Nat. Sci. Phila., 1863, 285 (St. Ann's).
- [*Aithurus*] *fuliginosus* GRAY, Hand-list, i, 1869, 134, no. 1718.
- Polytmus viridans* (ex Brisson) REICHENBACH, Aufz. der Colibr., 1854, 11; Troch. Enum., 1855, 9, pl. 799, figs. 4858–4860.
- (?) *Trochilus forficatus* (not of Linnæus) VIEILLLOT, Nouv. Dict. d'Hist. Nat., vii, 1817, 366 (Jamaica; based on Ois. Dorés, pl. 16).
- (?) *Ornismya furcata* (not *Trochilus furcatus* Gmelin) LESSON, Index Gen. and Synop. Troch., 1832, p. xxii, part (Jamaica).
- (?) *Aithurus taylori*<sup>a</sup> ROTHSCCHILD, Bull. Brit. Orn. Club, no. xix, June 30, 1894, p. xlvii, in text (St. Andrews, Jamaica; coll. Tring Mus.); Ibis, 1894, 548 (reprint).—BOUCARD, Gen. Hum. Birds, 1895, 402.
- [*Aethurus*] *polytmus* *taylori* SIMON, Cat. Troch., 1897, 24.

### AITHURUS SCITULUS Brewster and Bangs.

#### BLACK-BILLED STREAMER-TAIL.

Similar to *A. polytmus* but slightly smaller, and with bill wholly black, the adult male with green of under parts less yellowish, that of back, etc., more grass-green (less bronzy).

*Adult male*.—Pileum (including latero-occipital crests), together with loreal, orbital, and postocular regions, opaque velvety black; back, scapulars, wing-coverts, rump, and upper tail-coverts, metallic grass-green; remiges dull blackish or dusky, faintly glossed with purplish, the inner secondaries partly metallic green; tail uniform black, very faintly glossed with bluish; under parts bright metallic green, the feathers of throat and chest white basally (mostly concealed), those of abdomen, etc., more grayish basally; under tail-coverts bluish black; bill wholly black; iris dark brown; feet dusky; length (skins), including elongated rectrices, 211–250 (236); wing, 62.5–65

<sup>a</sup> Apparently a variety or "sport" of *A. polytmus* distinguished by possession of a ruby-red spot on the throat. See also Brewster and Bangs, Proc. New Engl. Zool. Club, ii, 1901, 49.

(63.9); tail, 147-184 (167.5); middle rectrices, 26.5-29.5 (28.3); culmen, 19-20.5 (19.5).<sup>a</sup>

*Adult female*.—Above metallic, slightly bronzy green, duller on pileum, where the feathers are dark sooty grayish tipped with metallic green; remiges dusky, faintly glossed with purplish, the outermost narrowly edged with whitish; middle pair of rectrices metallic bronze-green, the other rectrices metallic bronze-green basally, then bluish black, the two outermost broadly tipped with dull white; under parts white, the sides of neck, and thence to flanks, spotted with metallic green; bill wholly black; iris brown; feet dusky; length (skins), 96-108 (103); wing, 52.5-56.5 (54.8); tail, 33.5-39.5 (36.4); middle rectrices, 29-32 (30.5); culmen, 18.5-21 (20.3).<sup>a</sup>

Northern slope, island of Jamaica (Priestmans River; Port Antonio); accidental or casual on southern slope (vicinity of Kingston).

*Aithurus polytmus* (not *Trochilus polytmus* Linnæus) SCOTT, Auk, ix, 1892, 277, part.

*Aithurus scitulus* BREWSTER and BANGS, Proc. New Engl. Zool. Club, ii, Feb. 8, 1901, 49 (Priestmans River, Portland Parish, Jamaica; coll. Mus. Comp. Zool.).

#### Genus HEMISTEPHANIA Reichenbach.

*Doryfera* (not *Doryphora* Illiger, 1809) GOULD, Proc. Zool. Soc. Lond., 1847, 95. (Type, "*Trochilus (Doryfera) louise*" = *Trochilus ludovicæ* Bourcier and Mulsant.)

*Dorifera* BONAPARTE, Consp. Av., i, 1850, 68; Rev. et Mag. de Zool., 1854, 251. *Doryphora* (emendation; not of Illiger) CABANIS and HEINE, Mus. Hein., iii, April, 1860, 77.

[*Helianthea*.  $\alpha$ . *Hemistephania* REICHENBACH, Aufz. der Colib., 1854, 9. (Type, *Trochilus ludovicæ* Bourcier and Mulsant.)

Medium-sized Trochilidæ (length about 100-125 mm.) with the very long, subulate, slightly recurved bill about as long as body, tail shorter than bill, decidedly rounded, the rectrices broad, and rather dull coloration (nearly uniform dusky, the adult males, at least, with a frontal patch of metallic green or blue).

Bill very long (about as long as body, more than twice as long as head), slender-subulate, nearly straight but usually appreciably recurved, the tip compressed, the tomia smooth. Nostril slit-like, overhung by a broad, tumid, unfeathered operculum. Tarsus unfeathered, about as long as middle toe without claw; middle and inner toes equal in length, the outer decidedly shorter; hallux about equal to outer toe or slightly shorter. Wing less than twice as long as bill, the outermost primary longest. Tail half as long as wing to decidedly more, decidedly rounded, the rectrices broad, with rounded or sub-acuminate tip.

<sup>a</sup> Ten specimens.



*Coloration*.—Plumage in general soft and blended; coloration plain dusky bronze-green (sometimes black on under parts), brightest on posterior upper parts, the upper tail-coverts usually bluish; tail black, the rectrices usually tipped with dull grayish. Adult males with a frontal patch of bright metallic green, blue, or violet, the feathers scale-like.

*Range*.—Costa Rica to Venezuela, Ecuador, and Bolivia, in mountains. (Four species.)

### HEMISTEPHANIA VERAGUENSIS (Salvin).

#### VERAGUAN LANCE-BILL.

*Adult male*.—Forehead bright metallic green or bluish green (emerald green to viridian); crown, occiput, and hindneck dark bronze (varying from greenish to coppery); back, scapulars, rump, and lesser wing-coverts rather dark metallic green (dark parrot green to bottle green); upper tail-coverts dark metallic greenish blue or bluish green (indigo to nearly myrtle green); tail black, faintly glossed with greenish, the rectrices (except middle pair) tipped with deep brownish gray; larger wing-coverts dull black more or less glossed with metallic green, especially at tip; remiges blackish slate or slate-black, faintly glossed with purplish blue; chin and throat dark sooty gray or dusky, faintly glossed with green or bluish green; under tail-coverts sooty gray or dusky, more or less glossed with metallic bluish; femoral tufts grayish white; rest of under parts rather dull metallic bronze-green, the feathers deep sooty gray beneath surface; bill dull black; iris dark brown; feet light brownish (in dried skins), claws blackish; length (skins), 110–117 (116); wing, 57–60.5 (58.8); tail, 30.5–33.5 (32.8); culmen, 33.5–37 (35.2).<sup>a</sup>

*Adult female*.—Similar to the adult male but forehead dusky bronze, like rest of pileum, instead of greenish, and general coloration slightly duller, especially the under parts; length (skins), 113–116 (114); wing, 54.5–60.5 (56.7); tail, 30–32 (31.4); culmen, 33–35 (34.3).<sup>b</sup>

<sup>a</sup> Eight specimens.

<sup>b</sup> Six specimens.

| Locality.                               | Wing. | Tail. | Ex-<br>posed<br>culmen. |
|-----------------------------------------|-------|-------|-------------------------|
| MALES.                                  |       |       |                         |
| Six adult males from Costa Rica.....    | 58.7  | 33.3  | 35.6                    |
| Two adult males from Panamá.....        | 59.2  | 31.2  | 34.2                    |
| FEMALES.                                |       |       |                         |
| Four adult females from Costa Rica..... | 57.1  | 31.2  | 34.8                    |
| Two adult females from Panamá.....      | 55.7  | 31.7  | 33.5                    |

Costa Rica (Cervantes de Cartago; Volcán de Irazú; Coliblanco; La Hondura; San Isidro de La Palma) and western Panamá (Boquete, Chiriquí; Cordillera de Tolé).

*Dorifera ludovicæ* (not *Trochilus ludovicæ* Bourcier and Mulsant) SALVIN, Proc. Zool. Soc. Lond., 1867, 153 (Cordillera de Tolé, Panamá; crit.).

*Doryfera ludovicæ*? LAWRENCE, Ann. Lyc. N. Y., ix, 1868, 121 (Cervantes de Cartago, Costa Rica; crit.).

*Doryfera ludovicæ*? FRANTZIUS, Journ. für Orn., 1869, 315 (Costa Rica).

*Hemistephania ludovicæ* ZELEDÓN, Cat. Aves de Costa Rica, 1882, 20.

*Dorifera veraguensis* SALVIN, Proc. Zool. Soc. Lond., 1867, 154 (Cordillera de Tolé, Veragua, Panamá; coll. Salvin and Godman).

[*Doryphora*] *veraguensis* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 82.

*Doryfera veraguensis* MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., i, livr. 3, 1874, 199 (Costa Rica; Veragua); iii, livr. 1, 1876, 17.—MULSANT, Ann. Soc. Linn. Lyon, xxii, 1875, 217.—GOULD, Mon. Troch., Suppl., 1883, pl. 22.—BANGS, Proc. New Engl. Zool. Club, iii, 1902, 26 (Boquete, Panamá, 7,000–7,500 ft.).—EODES-DESLONGCHAMPS, Bull. Soc. Linn. Normandie, v, 1881, 180.—CARRIKER, Ann. Carnegie Mus., vi, 1910, 517 (Caribbean slope, Costa Rica; habits).

*D[oryfera] veraguensis* HARTERT, Das Tierreich, Troch., 1890, 11 (monogr.).

*Hemistephania veraguensis* ELLIOT, Classif. and Synop. Troch., 1879, 82.—ZELEDÓN, Cat. Aves de Costa Rica, 1882, 20; Anal. Mus. Nac. Costa Rica, i, 1887, 121.—SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 40 (Volcán de Irazú, Costa Rica; Chiriquí and Cordillera de Tolé, Panamá).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 253, pl. 55, fig. 1.—BOUCARD, The Hum. Bird, ii, 1892, 86 (Veragua); Gen. Hum. Birds, 1895, 307 (Veragua).—SALVADORI and FESTA, Boll. Mus. Zool., etc., Torino, xiv, 1899, no. 339, 7 (Chiriquí).—FERRY, Pub. 146, Field Mus. N. H., orn. ser., i, no. 6, 1910, 263 (Coliblanco, Costa Rica).

[*Hemistephania*] *veraguensis* SHARPE, Hand-list, ii, 1900, 97 (Panamá; Costa Rica).

[*Hemistephania*] *lud[ovicæ]* *veraguensis* SIMON, Cat. Troch., 1897, 5.

### Genus ANTHOSCENUS Richmond.

*Floricola* (not of Gistel, 1848<sup>a</sup>) ELLIOT, Classif. and Synop. Troch., Sept., 1878 (=1879?) 82. (Type, *Trochilus longirostris* Vieillot.)

*Heliomastes* BONAPARTE, Rev. et. Mag. de Zool., vi, pt. 2, 1854, 251. (Type, *Trochilus longirostris* Vieillot.)

*Anthoscenus*<sup>b</sup> RICHMOND, Proc. Biol. Soc. Wash., xv, April 25, 1902, 85. (Type, *Trochilus longirostris* Vieillot.)

*Anthoscaenus* (emendation) HELLMAYR, Novit. Zool., xiii, no. 1, Feb. 24, 1906, 36.

Medium-sized or rather large Trochilidæ (length, including the very long bill, about 110–125 mm.) with bill very long (more than half to three-fifths as long as wing), straight, terete; tail about half as long as wing, truncate or slightly rounded; and with a white spot or streak on rump, and white tips to outer rectrices

Bill very long, more than half to three-fifths as long as wing, straight, terete, but broader and more depressed at base; culmen rounded except for basal third, or less, where contracted into a nar-

<sup>a</sup> Naturgesch., p. xi.

<sup>b</sup> Ἀνθος, a flower; σκῆνος, a hut, tent. (Richmond.)

row ridge; tomia smooth; maxilla with a rather broad longitudinal groove above middle line. Nasal operculum rather narrow, nearly straight along edge, mostly nude, the frontal feathering extending to or beyond the middle of operculum (sometimes nearly to its anterior end), forming a short point or antia on each side of the mesorhinium. Tarsus naked; lateral toes about equal, slightly shorter than middle toe, the hallux about as long as lateral toes. Wing less than half to more than twice as long as exposed culmen, the outermost primary longest. Tail about half as long as wing, truncated or slightly rounded, the rectrices very firm, rounded or, sometimes, rather pointed at tip.

*Coloration*.—Above bronze, greenish bronze or bronze-green, or olive glossed with metallic bronze, etc., the rump with a white spot or streak; adults with throat (at least its lower portion) metallic red or purple, the remaining under parts grayish (sometimes glossed with bronze or greenish laterally) paler (sometimes white) along median line; under tail-coverts white terminally and laterally, dusky grayish centrally; outer rectrices tipped with white. Some species with pileum bright metallic blue or green.

*Range*.—Mexico to Guiana, Bolivia, and Ecuador. (About six species.)

KEY TO THE SPECIES AND SUBSPECIES OF *ANTHOSCENUS*.

- a. Feathers of throat without paler margins; adult males with forehead and crown bright metallic blue or bluish green, very different from color of back, etc.
- b. Under tail-coverts mostly white. (Ecuador.)

*Anthoscenus albicrissa* (extralimital).<sup>a</sup>

- bb. Under tail-coverts mostly dusky. (*Anthoscenus longirostris*.)

- c. Adult males with forehead and crown blue or greenish blue. (Amazon Valley, Guiana, and Trinidad to Costa Rica.)

*Anthoscenus longirostris longirostris* (p. 346).

- cc. Adult male with forehead and crown bluish green. (Guatemala and southern Mexico.).....*Anthoscenus longirostris pallidiceps* (p. 349).

- aa. Feathers of throat narrowly margined with pale grayish or dull whitish (very conspicuous when viewed from behind); adult males with forehead and crown dull metallic green or bronze-green, concolor with back or duller. (*Anthoscenus constantii*.)

- b. Coloration darker; metallic red of throat more extensive, occupying most if not all of throat; chin sooty blackish. (Guatemala to Costa Rica.)

*Anthoscenus constantii constantii* (p. 350).

- bb. Coloration paler, at least below; metallic red of throat more restricted, confined to extreme lower portion; chin and upper throat grayish. (South-western and western Mexico.).....*Anthoscenus constantii leocadiæ* (p. 352).

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<sup>a</sup> *Helimaster albicrissa* Gould, Proc. Zool. Soc. Lond., 1871, 504 (Citado, Ecuador; coll. J. Gould).—*Helimastes albicrissa* Mulsant and Verreaux, Hist. Nat. Ois.-Mouch., ii, 1876, 274.—*Floricola albicrissa* Elliot, Classif. and Synop. Troch., 1879, 83; Salvin, Cat. Birds Brit. Mus., xvi, 1892, 231.—*F[loricola] albicrissa* Hartert, Das Tierreich, Troch., 1900, 192.—*[Floricola] long [irostris] albicrissa* Simon, Cat. Troch., 1897, 37.



## ANTHOSCENUS LONGIROSTRIS LONGIROSTRIS (Vieillot).

## LONG-BILLED STAR-THROAT.

*Adult male*.—Forehead and crown bright metallic blue to greenish blue; occiput and hindneck dark bronze or coppery bronze, appearing nearly black when viewed from in front; back, scapulars, wing-coverts, rump, upper tail-coverts and middle rectrices metallic bronze or bronze-green, the last sometimes blackish terminally; center of rump with an elongated white patch, spot, or broad streak; lateral rectrices metallic bronze or bronze-green basally, blackish terminally, the two outermost usually with a terminal spot of white (smaller on second rectrix); remiges dark brownish slate or dusky, faintly glossed with purplish; a small (usually indistinct) postocular spot of whitish; a broad and conspicuous rectal streak or stripe of dull white; chin dull black; throat metallic reddish purple (pomegranate to magenta), the feathers dusky basally; foreneck, sides of neck, chest, and breast, brownish gray (nearly mouse gray laterally, paler medially), fading into white on abdomen; sides and flanks metallic bronze or bronze-green, the feathers gray basally and, usually, margined with the same; under tail-coverts dusky, broadly and sharply tipped or terminally margined with white; a large and conspicuous tuft of silky white feathers between flanks and rump; bill dull black; iris dark brown; feet dusky; length (skins), 104–126 (112); wing, 57–63 (59.7); culmen, 30–36 (33.4).<sup>a</sup>

*Adult female*.—Similar to the adult male but forehead and crown dull metallic green (similar to but duller and darker than color of back), blackish of chin more extended, sometimes occupying greater part of throat, where the metallic reddish purple is sometimes restricted to a few feathers on extreme lower portion, and gray of under parts slightly paler, especially along median line; length (skins), 106–119 (112); wing, 56.5–61 (59.3); tail, 28.5–34.5 (31.3); culmen, 32–35.5 (33.7).<sup>b</sup>

<sup>a</sup> Twenty-six specimens.<sup>b</sup> Fifteen specimens.

| Locality.                                                          | Wing. | Tail. | Culmen. |
|--------------------------------------------------------------------|-------|-------|---------|
| MALES.                                                             |       |       |         |
| One adult male from British Guiana.....                            | 58    | 29.5  | 33      |
| Six adult males from Trinidad.....                                 | 58.2  | 32.2  | 32.6    |
| Four adult males from Colombia (Bogotá, etc.).....                 | 61.6  | 32.7  | 34.7    |
| Five adult males from Panamá.....                                  | 59.9  | 32.7  | 33      |
| Ten adult males from Costa Rica.....                               | 59.8  | 31.5  | 33.6    |
| Seven adult males ( <i>A. l. pallidiceps</i> ) from Guatemala..... | 59.9  | 32.6  | 31.6    |
| Four adult males ( <i>A. l. pallidiceps</i> ) from Mexico.....     | 55.8  | 32.2  | 32.2    |
| FEMALES.                                                           |       |       |         |
| Three adult females from Trinidad.....                             | 58.2  | 30.5  | 34      |
| Two adult females from Panamá.....                                 | 58    | 30.7  | 33      |
| Nine adult females from Costa Rica.....                            | 60.2  | 31.8  | 33.5    |
| One adult female ( <i>A. l. pallidiceps</i> ) from Guatemala.....  | 57    | 32    | 32.5    |

With the material examined I am unable to make out satisfactorily any geographic variations sufficiently marked or constant to warrant the recognition of two or more subspecies. Costa Rican specimens, however, vary more or less toward *A. l. pallidiceps*, some examples being hardly distinguishable from the latter.

*Immature?*—Similar to the adult female but without any metallic purple feathers on throat, which is wholly (centrally at least) dusky, the feathers usually tipped with dull white or grayish.

*Young.*—Similar to the supposed immature plumage, as described above, but feathers of upper parts (especially those of rump) more or less distinctly tipped with pale rusty brown or buffy; throat sometimes mostly dull white.

Costa Rica (San José; Rancho Redondo; Cerro de la Candelaria; San Pedro del Mojón; Angostura; Escazú; Volcán de Irazú; Tucuríqui; Boruca; Paso Real, and Barranca, Boruca; Térraba; El General; Pozo Azul de Pirris; Bebedero), Panamá (Cordillera del Chucu; Cordillera de Tolé; Calovévora; Calobre; Chitra; Santa Fé de Veragua; Laguna del Castillo; David; Divala; Boquete; El Banco; Loma del León; Paraiso; Chepo; Panamá; Saboga Island) and southward through Colombia, Venezuela, and the Guianas to lower Amazon Valley.

*Trochilus longirostris* AUDEBERT and VIEILLOT, Ois. Dorés, i, livr. 10, 1801, 107, pl. 59 (Trinidad).—VIEILLOT, Nouv. Dict. d'Hist. Nat., vii, 1817, 366 (Trinidad).

*T[rochilus] longirostris* VIEILLOT, Tabl. Enc. Méth., ii, 1822, 566.

*Ornismya longirostris* D'ORBIGNY and LAFRESNAYE, Mag. de Zool., 1854 (Synop. Av., ii, 29).

[*Helimaster*] *longirostris* BONAPARTE, Consp. Av., i, 1850, 70.—PELZELN, Orn. Bras., iv. Abth., 1870, 408.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 90.

*Helimaster longirostris* GOULD, Mon. Troch., pt. v, 1853 (vol. iv), pl. 259; Introd. Troch., oct. ed., 1861, 138.—SCLATER, Proc. Zool. Soc. Lond., 1856, 140 (David, Panamá); 1857, 16 (Bogotá, Colombia); Cat. Am. Birds, 1862, 310 (South America).—SALVIN, Ibis, 1885, 435 (Merumé Mts. and Roraima, Brit. Guiana); Proc. Zool. Soc. Lond., 1867, 155 (Cordillera de Tolé and Santa Fé de Veragua, Panamá; crit.); 1870, 210 (Cordillera del Chucu, Laguna del Castillo, Calovévora, and Chitra, Panamá).—TAYLOR, Ibis, 1864, 92 (Trinidad).—PELZELN, Orn. Bras., i. Abth., 1868, 31.—LAWRENCE, Ann. Lyc. N. Y., ix, 1868, 126 (Costa Rica).—FRANTZIUS, Journ. für Orn., 1869, 317 (Costa Rica).—FINSCH, Proc. Zool. Soc. Lond., 1870, 562 (Trinidad).—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1867, 752 (Chyavetas, e. Peru), 979 (Pebas, e. Peru); 1873, 288 (Chyavetas, Chamicurós, and Pebas, e. Peru); 1879, 530 (Colombia).—MULSANT, Ann. Soc. Linn. Lyon, xxii, 1875, 215.—ELLIOT, Ibis, 1877, 138 (Guarayos, Bolivia).—EUDES-DESLONGCHAMPS, Bull. Soc. Linn. Normandie, v, 1881, 262.—TACZANOWSKI, Proc. Zool. Soc. Lond., 1882, 33 (Yurimaguas, e. Peru).—BERLEPSCH, Journ. für Orn., 1887, 321 (Bogotá; crit.).—BOUCARD, The Hum. Bird, ii, 1892, 86 (Bogotá).

[*Helimaster*] *longirostris* CABANIS and HEINE, Mus. Hein., iii, 1860, 54 (Cayenne).—SALVIN, Ibis, 1869, 316, in text (Costa Rica; crit.).

[*Helimastes*] *longirostris* BONAPARTE, Rev. et Mag. de Zool., 1854, 251.

*Helimastes longirostris* MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., ii, livr. 4, 1876, 271 (Trinidad; the Guianas; Venezuela; Amazonia; Colombia; Costa Rica); iv, livr. 3, 1878, 211 (synonymy).

[*Selasphorus*. *γ*. *Helimaster*] *longirostris* REICHENBACH, Aufz. der Colibr., 1854, 13. *Mellisuga longirostris* LÉOTAUD, Ois. Trinidad, 1866, 137.

- Floricola longirostris* ELLIOT, Classif. and Synop. Troch., 1879, 83, part.—ZELEDÓN, Cat. Aves de Costa Rica, 1882, 20.—TACZANOWSKI, Orn. du Pérou, i, 1884, 391.—SIMON, Mém. Soc. Zool. France, ii, 1889, 221 (San Esteban, Venezuela; crit.).—SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 229, part (Bebedero and Tucuríquí, Costa Rica; Cordillera del Chucu, etc., Panamá; South American localities).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 304, part (Costa Rican, Panaman, and South American localities).—CHERRIE, Expl. Zool. Merid. Costa Rica, 1893, 45 (Boruca and Térraba, s. w. Costa Rica).—CHAPMAN, Bull. Am. Mus. N. H., vi, 1894, 57 (Trinidad).—BANGS, Proc. Biol. Soc. Wash., xii, 1898, 135 (Santa Marta, Colombia).—ALLEN, Bull. Am. Mus. N. H., xiii, 1900, 139 (Bonda, etc., Santa Marta, Colombia).—SIMON and DALMAS, Orn. xi, 1901, 215 (Trinidad; Yacua, Andes de Cumaná, Venezuela).—BERLEPSCH and HARTERT, Novit. Zool., ix, 1902, 88 (Suapuré, La Pricion, and Maipures, Venezuela).—*Anthoscenus longirostris* BERLEPSCH, Novit. Zool., xv, Nov., 1908, 265 (Cayenne).
- Trochilus superbus* SHAW, Nat. Misc., xiii, No. 7, March, 1802, pl. 517 ("Southern parts of America"); Gen. Zool., viii, 1811, 323, pl. 41, fig. 2.—TEMMINCK, Pl. Col., iv, livr. 50, Sept. 1824, pl. 299, fig. 1.—LESSON, Index Gen. et Syn. Troch., 1832, p. xix (Trinidad).
- Ornismya superba* LESSON, Hist. Nat. Ois.-Mouch., 1829, pp. xxv, 40, pl. 2; Suppl. Ois.-Mouch., 1830-31, 164, pl. 33.
- [*Floricola*] *superba* SHARPE, Hand-list, ii, 1900, 138.
- Floricola superba* BANGS, Auk, xxiv, 1907, 296 (Boruca, Paso Real, and Barranca, s. w. Costa Rica).
- Floricola superba superba* CARRIKER, Ann. Carnegie Mus., vi, 1910, 544 (Costa Rica; crit.; habits).
- [*Helimaster*] *sclateri* CABANIS and HEINE, Mus. Hein., iii, March, 1860, 54 (Venezuela; coll. Heine Mus.).
- Helimaster sclateri* GOULD, Introd. Troch., oct. ed., 1861, 139.—LAWRENCE, Ann. Lyc. N. Y., viii, 1867, 482 (Isthmus Panamá); ix, 1868, 126 (San José and Angostura, Costa Rica; crit.).—FRANTZIUS, Journ. für Orn., 1869, 317 (Costa Rica).
- [*Helimaster longirostris*] var. *sclateri* MULSANT, Ann. Soc. Linn. Lyon, n. s., xxii, 1876, 215.
- Helimaster stuartae* LAWRENCE, Ann. Lyc. Nat. Hist. N. Y., vii, 1860, 108 (Bogotá, Colombia; coll. G. N. Lawrence).—GOULD, Introd. Troch., oct. ed., 1861, 138.—SCLATER, Cat. Am. Birds, 1862, 310 (Bogotá).—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1864, 365 (Panamá).
- [*Helimaster longirostris*] var. *stuartae* MULSANT, Ann. Soc. Linn. Lyon, n. s., xxii, 1876, 215.
- [*Floricola*] *long[irostris]* *stuartae* SIMON, Cat. Troch., 1897, 37.
- [*loricola*] *superba stewartae* HARTERT, Das Tierreich, Troch., 1900, 192 (Andes of Colombia).
- Helimaster pallidiceps* (not of Gould) LAWRENCE, Ann. Lyc. N. Y., ix, 1868, 126 (Gulf of Nicoya, Costa Rica).—FRANTZIUS, Journ. für Orn., 1869, 317 (Costa Rica).—BOUCARD, The Hum. Bird, ii, 1892, 86 (Veragua; Panamá).
- Floricola superba pallidiceps* BANGS, Auk, xviii, Oct., 1901, 360 (Divala, Panama); Proc. New Engl. Zool. Cl., iii, 1902, 31 (Boquete, Panamá, 3,000 ft.).
- [*loricola*] *superba (typica)* HARTERT, Das Tierreich, Troch., 1900, 192.



## ANTHOSCENUS LONGIROSTRIS PALLIDICEPS (Gould).

## PALE-CROWNED STAR-THROAT.

Similar to *A. l. longirostris*, but adult male with forehead and crown metallic green or bluish green instead of blue or greenish blue.

*Adult male*.—Length (skins), 103–118 (111); wing, 57–61.5 (58.9); tail, 31–34.5 (32.5); culmen, 30–33.5 (31.8).<sup>a</sup>

*Adult female*.—Length (skin), 105; wing, 57; tail, 32; culmen, 32.5.<sup>b</sup>

Nicaragua (Chontales), Salvadór (Volcán de San Miguél; La Libertad), Guatemala (Santa Ana, Petén; Patulúl, Sololá; Dueñas; Gualán; Mazatenango; Las Salinas; Retalhuleu; Naranjo) and southeastern Mexico, in States of Chiapas (Gineta Mountains), Oaxaca (Santa Efigénia; Tehuántepec; Sierra de Santo Domingo; Tonila) Vera Cruz (Jalapa; Tospám, near Córdoba), and Guerrero (Chilpancingo).

[*Helimaster*] *pallidiceps* GOULD, *Introd. Troch.*, oct. ed., 1861, 139 (Jalapa, Vera Cruz; coll. J. Gould).—SCLATER and SALVIN, *Nom. Av. Neotr.*, 1873, 90.

*Helimaster pallidiceps* GOULD, *Introd. Troch.*, oct. ed., 1861, 139 (Mexico; Guatemala).—SCLATER, *Cat. Am. Birds*, 1862, 310 (Las Salinas, Vera Paz, Guatemala).—(?) SALVIN, *Ibis*, 1866, 205 (Dueñas); 1872, 313, 320 (Chontales, Nicaragua; crit.); *Cat. Strickl. Coll.*, 1881, 367 (Guatemala).—D'OCA, *Troq. de Mex.*, 1875, 17, pl. (3), fig. 9.—BOUCARD, *Notes Troch. du Mex.*, 1875, 11 (Tospám, near Córdoba, Vera Cruz); *Liste Ois. récol. Guat.*, 1878, 45.—LAWRENCE, *Bull. U. S. Nat. Mus.*, no. 4, 1876, 32 (Santa Efigénia, Oaxaca).—MULSANT, *Ann. Soc. Linn. Lyon*, xxii, 1876, 215.

[*Helimaster*] *pallidiceps* SALVIN, *Ibis*, 1869, 316, in text (Guatemala).

*Helimastes pallidiceps* MULSANT and VERREAUX, *Hist. Nat. Ois.-Mouch.*, ii, livr. 4, 1876, 275 (Mexico to Nicaragua); iv, livr. 3, 1878, 211 (synonymy).

*Floricola longirostris pallidiceps* HARTERT (E. and C.), *Novit. Zool.*, i, Jan., 1894, 20 (Chilpancingo, Guerrero, 4,000 ft.; crit.).

[*Floricola*] *long[irostris] pallidiceps* SIMON, *Cat. Troch.*, 1897, 36.

[*Floricola*] *superba pallidiceps* HARTERT (E.), *Das Tierreich*, Troch., 1900, 192.

*Anthoscenus superbus pallidiceps* DEARBORN, *Pub. 125, Field Mus. N. H.*, Nov., 1907, 99 (Mazatenango and Patulúl, Guatemala).

[*Floricola*] *pallidiceps* SHARPE, *Hand-list*, ii, 1900, 138.

*Helimaster longirostris* (not *Trochilus longirostris* Audebert and Vieillot) SALVIN, *Ibis*, 1860, 263 (Dueñas, Guatemala).—SALVIN and SCLATER, *Ibis*, 1860, 195, 263, 276 (Dueñas).—ELLIOT, *Classif. and Synop. Troch.*, 1879, 83, part.

*Floricola longirostris* ELLIOT, *Classif. and Synop. Troch.*, 1879, 83, part.—SALVIN, *Cat. Birds Brit. Mus.*, xvi, 1892, 229, part (Jalapa, Vera Cruz; Oaxaca and Sierra de Santo Domingo, Oaxaca; Santa Ana, Las Salinas, Retalhuleu,

<sup>a</sup> Eleven specimens.

<sup>b</sup> One specimen (from Guatemala).

| Locality.                             | Wing. | Tail. | Ex-<br>posed<br>culmen. |
|---------------------------------------|-------|-------|-------------------------|
| MALES.                                |       |       |                         |
| Seven adult males from Guatemala..... | 59.9  | 32.6  | 31.6                    |
| Four adult males from Mexico.....     | 55.8  | 32.2  | 32.2                    |

and Dueñas, Guatemala; Chontales, Nicaragua?).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 304, part (Jalapa; Santa Efigénia, Tapana, Tonila, etc., Oaxaca; Guatemalan localities; Volcan de San Miguél and La Libertád, Salvador; Chontales, Nicaragua).

### ANTHOSCENUS CONSTANTII CONSTANTII (Delattre).

#### CONSTANT'S STAR-THROAT.

*Adult male*.—Above metallic bronze or bronze-green, somewhat duller on pileum, especially on forehead; rump with a longitudinal median patch or broad streak of white; middle rectrices usually dusky terminally, the other rectrices extensively blackish terminally, the inner web tipped with a spot of white; remiges brownish slate or dusky, faintly glossed with purplish; a postocular spot and a conspicuous rictal stripe dull white, the auricular, suborbital, and loreal regions dusky; chin sooty or blackish; throat bright metallic red or purplish red (varying from orange-red or scarlet to rose-red),<sup>a</sup> the feathers narrowly margined terminally with pale grayish or dull whitish (invisible except when viewed from behind); under parts of body brownish gray (deep smoke gray or nearly mouse gray), fading to white on abdomen and anal and femoral regions; under tail-coverts pale gray basally, dusky subterminally (in form of a V- or U-shaped bar), broadly white terminally; a large and conspicuous tuft of silky white feathers on sides, between flanks and back; bill dull black; iris dark brown; feet dusky; length (skins), 113–130 (119); wing, 63–70.5 (66.9); tail, 28.5–37 (34.1); culmen, 33.5–36.5 (34.5).<sup>b</sup>

*Adult female*.—Very similar to the adult male and not always distinguishable, but usually (?) with the blackish of chin slightly more extended; length (skins), 113–128 (117); wing, 64–68.5 (65.7); tail, 31–34 (32.6); culmen, 34–37.5 (35.5).<sup>c</sup>

<sup>a</sup> The more orange hue characterizes specimens in older or more worn plumage, the more purplish or rosy hue those in fresh livery.

<sup>b</sup> Fifteen specimens.

<sup>c</sup> Ten specimens, from Costa Rica.

| Locality.                                                                              | Wing. | Tail. | Ex-<br>posed.<br>culmen. |
|----------------------------------------------------------------------------------------|-------|-------|--------------------------|
| MALES.                                                                                 |       |       |                          |
| Ten adult males from Costa Rica.....                                                   | 68    | 34.4  | 35.2                     |
| One adult male from Salvador.....                                                      | 70    | 34.5  | 35.5                     |
| Seven adult males from Guatemala.....                                                  | 64.9  | 33.7  | 33.3                     |
| One adult male ( <i>A. c. leocadiæ</i> ) from Chiapas.....                             | 65.5  | 33    | 35                       |
| Fifteen adult males ( <i>A. c. leocadiæ</i> ) from Oaxaca, Guerrero, etc., Mexico..... | 67.1  | 33    | 34.4                     |
| FEMALES.                                                                               |       |       |                          |
| Ten adult females from Costa Rica.....                                                 | 65.7  | 32.6  | 35.5                     |
| Two adult females ( <i>A. c. leocadiæ</i> ) from Chiapas.....                          | 59.5  | 30.2  | 34.2                     |
| Three adult females ( <i>A. c. leocadiæ</i> ) from Guerrero, etc., Mexico.....         | 65    | 31.3  | 33.8                     |

With the exception of the type, which is said to be from Guatemala, all Guatemalan examples examined are much paler below than those from Costa Rica and Nicaragua;

*Immature*.—Similar to adults, but greater part (sometimes whole) of throat dark sooty brown or dusky, the feathers margined terminally with grayish white.

*Young*.—Similar to the immature plumage, as described above, but feathers of upper parts narrowly tipped or margined terminally with buffy.

Costa Rica (San José; San Isidro; San Pedro de Mojón; Angostura; Corralillo; Orosí; Bolsón; Bebedero; Volcán de Miravalles, up to 2,000 feet; Tempate; Tenorio; Boruca), Nicaragua (Matagalpa; Momotombo; boundary line between Nicaragua and Honduras, 180 miles from Pacific coast), Salvador (San Salvador; La Libertad; Volcán de San Miguel), and Guatemala (Amatitlán; San Gerónimo; Gualán; Toyabáj, Quitché).

*Ornismya constantii* DELATTRE, *Echo du Monde Savant*, 10<sup>e</sup> ann., ser. 2, vii, no. 45, June 15, 1843, 1069, in text (Guatemala; coll. A. Delattre; type now in coll. Am. Mus. N. H.).

[*Selasphorus*. γ. *Helimaster*] *constantii* REICHENBACH, *Aufz. der Colibr.*, 1854, 13.

[*Helimastes*] *constantii* BONAPARTE, *Rev. et Mag. de Zool.*, 1854, 251.

*Helimastes constanti* Mulsant and Verreaux, *Hist. Nat. Ois.-Mouch.*, ii, livr. 4, 1876, 269 (Guatemala; Costa Rica); iv, livr. 2, 1877, pl. 57; iv, livr. 3, 1878, 210 (synonymy).

*Helimaster constanti* GOULD, *Mon. Troch.*, pt. v, May, 1853 (vol. iv), pl. 260; *Introd. Troch.*, oct. ed., 1861, 140.—SCLATER and SALVIN, *Ibis*, 1859, 129 (Guatemala).—SALVIN, *Ibis*, 1860, 263 (San Gerónimo, Guatemala).—CABANIS, *Journ. für Orn.*, 1862, 164 (Costa Rica).—Mulsant and Verreaux, *Classif. Troch.*, 1866, 26.—LAWRENCE, *Ann. Lyc. N. Y.*, ix, 1868, 126 (Costa Rica).—FRANTZIUS, *Journ. für Orn.*, 1869, 317 (Costa Rica).—BOUCARD, *Proc. Zool. Soc. Lond.*, 1878, 69 (San José, Costa Rica).—Eudes-Deslongchamps, *Bull. Soc. Linn. Normandie*, v, 1881, 267.

[*Helimaster*] *constanti* CABANIS and HEINE, *Mus. Hein.*, iii, 1860, 54 (Costa Rica).

[*Helimaster*] *constanti* SCLATER and SALVIN, *Nom. Av. Neotr.*, 1873, 90.—Mulsant, *Ann. Soc. Linn. Lyon*, xxii, 1876, 215.

[*Selasphorus*] *constantii* REICHENBACH, *Troch. Enum.*, 1855, 11.

[*Trochilus*] *constantii* GRAY, *Hand-list*, i, 1869, 137, no. 1762.

*Floricola constanti* ELLIOT, *Classif. and Synop. Troch.*, 1879, 84.—ZELEDÓN, *Cat. Aves de Costa Rica*, 1882, 20; *Anal. Mus. Nac. Costa Rica*, 1887, 121 (San José).—SALVIN, *Cat. Birds Brit. Mus.*, xvi, 1892, 231, 661 (San Gerónimo, Guatemala; La Libertad, Salvador; Bebedero, Costa Rica).—SALVIN and GODMAN, *Biol. Centr.-Am.*, Aves, ii, 1892, 306 (San Salvador, Volcán de San Miguel, and La Libertad, Salvador; Matagalpa and Momotombo, Nicaragua, etc.).—CHERRIE, *Auk*, ix, 1892, 324 (San José, Costa Rica).—BOUCARD, *Gen. Hum. Birds*, 1895, 304, part (Guatemala; San José, Costa Rica).—UNDERWOOD, *Ibis*, 1896, 442 (Volcán de Miravalles, Costa Rica).—LANTZ, *Trans. Kans. Ac. Sci. for 1896-97* (1899), 221 (Amatitlán, Guatemala).

indeed, in the coloration of the under parts (except throat) they are quite like *A. c. leocadiæ* of Mexico. It is possible there may have been an error in ascribing the type to Guatemala, for in the dark-colored under parts it is exactly like Costa Rican specimens and very different from other Guatemalan ones examined; in which case there would be three geographic forms of this species: *A. c. constantii* of Costa Rica and Nicaragua, *A. c.* ———? of Guatemala and Salvador, and *A. c. leocadiæ* of Mexico.



[*Floricola*] *constanti* SHARPE, Hand-list, iii, 1900, 138.

*F[loricola] constanti (typica)* HARTERT, Das Tierreich, Troch., 1900, 193 (monogr.).  
*Anthoscenus constanti* MILLER (W. DeW.), Bull. Am. Mus. N. H., xxi, Nov. 24, 1905, 355, in text.

*Floricola constanti constanti* CARRIKER, Ann. Carnegie Mus., vi, 1910, 545 (central plateau and Guanacaste, Costa Rica).

### ANTHOSCENUS CONSTANTII LEOCADIÆ (Bourcier).

#### PINE STAR-THROAT.

Similar to *A. c. constantii*, but general coloration paler, especially below; metallic red of throat much more restricted (occupying lower throat only), the chin and upper throat dull sooty grayish (instead of blackish), with paler margins to the feathers.

*Adult male*.—Length (skins), 113–130 (121); wing, 64.5–70.5 (67.1); tail, 31–36.5 (33); culmen, 32–36 (34.4).<sup>a</sup>

*Adult female*.—Length (skins), 112–121 (116); wing, 59.5–66 (63.6); tail, 28.5–32 (30.9); culmen, 33–35 (34).<sup>b</sup>

Southern and western Mexico, in States of Chiapas (Gineta Mountains; Ocuilapa; San Vicente), Oaxaca (Chimalapa; Tehuántepec), Guerrero (Acapulco; Tlapa; Iguala; Papayo; Dos Arroyos; Rio Papagaio; Alto de Camarón; Venta de Pelegrino), Michoacán (La Salada), Jalisco (Bolaños; Huejuquilla), and Sinaloa (Mazatlán; Presidio de Mazatlán; Sierra de Álamos; Los Píeles; Escuinapa; Rosario; Mount Juan Lisiarraga), and Territory of Tepic (San Blas; Santiago).

*Trochilus leocadiæ* BOURCIER and Mulsant, Ann. Sci. Phys. et Nat. d'Agric., etc., Lyon, ser. 2, iv, 1852, 141 (Mexico).

*Helimaster leocadiæ* GOULD, Introd. Troch., oct. ed., 1861, 140.—SCLATER, Cat. Am. Birds, 1862, 310.—MULSANT and VERREAUX, Classif. Troch., 1866, 26.—LAWRENCE, Mem. Bost. Soc. N. H., ii, 1874, 292 (Mazatlán).—BOUCARD, Notes Troch. du Mex., 1875, 12.—SUMICHRIST, La Naturelleza, v, 1881, 250 (Tehuántepec).

[*Helimaster*] *leocadiæ* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 90.

[*Helimaster*] *leocadiæ* MULSANT, Ann. Soc. Linn. Lyon, xxii, 1876, 215.

*Helimastes leocadiæ* MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., ii, livr. 4, 1875, 276.

[*Trochilus*] *leocadiæ* GRAY, Hand-list, i, 1869, 137, no. 1763.

*Floricola leocadiæ* ELLIOT, Classif. and Synop. Troch., 1879, 84.—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 306.

[*Floricola*] *leocadiæ* SHARPE, Hand-list, ii, 1900, 138.

*F[loricola] constanti leocadiæ* HARTERT, Das Tierreich, Troch., 1900, 193.

*Anthoscenus leocadiæ* MILLER (W. De W.), Bull. Am. Mus. N. H., xxi, Nov. 24, 1905, 355 (Escuinapa, etc., s. Sinaloa; crit.).

[*Helimastes*] *leocadia* BONAPARTE, Rev. et Mag. de Zool., 1854, 251.

*Helimaster leocadia* LAWRENCE, Bull. U. S. Nat. Mus., no. 4, 1876, 32 (Tehuántepec City, Oaxaca).

<sup>a</sup> Fifteen specimens.

<sup>b</sup> Five specimens.

*Floricola leocardiæ* SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 232 (Sierra de Álamos, Sonora; Presidio de Mazatlán; Bolaños, Jalisco; Valley of Mexico; Dos Arroyos, Rio Papagaio, Alta de Camarón, and Venta de Pelegrino, Guerrero; Chimalapa, Oaxaca).

*Helimaster pinicola* GOULD, Mon. Troch., iv, pt. v, May, 1853, pl. 261.—DE OCA, La Naturaleza, iii, 1875, 299; Troq. de Mex., 1875, 53, pl. (11), fig. 42.

[*Helimaster*] *pinicola* SANCHEZ, Anal. Mus. Nac. Mex., i, 1877, 96 (pine region n. Mexico).

[*Selasphorus*. γ. *Helimaster*] *pinicola* REICHENBACH, Aufz. der Colib., 1854, 13. [*Selasphorus*] *pinicola* REICHENBACH, Troch. Enum., 1855, 11.

*Helimaster constantii* (not *Ornismya constantii* Delattre) SCLATER, Proc. Zool. Soc. Lond., 1856, 287 (Mexico).

*Helimaster constanti* LAWRENCE, Bull. U. S. Nat. Mus., no. 4, 1876, 32 (Gineta Mts., Chiapas).

*Floricola constanti* BOUCARD, Gen. Hum. Birds, 1895, 304, part (Mexico).

### Genus PAMPA Reichenbach.

*Pampa* REICHENBACH, Aufz. der Colib., 1854, 11. (Type, *P. campyloptera* Reichenbach=*Ornismya pampa* Lesson.)

*Sphenoproctus*<sup>a</sup> CABANIS and HEINE, Mus. Hein., iii, Feb., 1860, 11. (Type, *Ornismya pampa* Lesson.)

Rather large Trochilidæ (length about 115–125 mm.) with thickened shafts to outer primaries, straight, stout bill much longer than head, long graduated or cuneate tail, and under parts plain light gray.

Bill about one and a half times as long as head, straight or very nearly so, stout, broad and depressed basally; tomia smooth; mandible with a median lateral groove, the maxilla with a less distinct lateral groove. Nostril narrow, slit-like, overhung by a very broad, convex, tumid, unfeathered operculum. Tarsus densely feathered, slender, about as long as middle toe, the latter about as long as inner and slightly longer than outer toe; hallux decidedly shorter than outer toe; toes all slender and weak, and claws relatively small, especially that of the hallux. Wing much more than twice as long as bill, the outermost primary longest, the three outermost with shafts thickened basally, especially the outer one, which in adult males has the shaft greatly swollen in middle portion. Tail three-fourths (more or less) as long as wing, graduated for more than one-fourth its length, the rectrices broad but decreasing in width terminally, especially the middle pair, which in adult males are abruptly longer than the rest.

*Coloration*.—Forehead and crown metallic blue or violet, the rest of upper parts metallic green or bronze-green; lateral rectrices dusky, tipped with dull grayish in females; under parts wholly pale gray.

*Range*.—Southern Mexico to Guatemala. (Two species.)

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<sup>a</sup> "Von σφῆν (Keil) und πρωκτός (Steiss)." (Cabanis and Heine.)

## KEY TO THE SUBSPECIES OF PAMPA PAMPA.

- a. Under parts drab-gray; pileum metallic violet; bill shorter (culmen averaging 24.5 in adult male, 24 in adult female). (Guatemala to Yucatan.)

Pampa pampa pampa (p. 354).

- aa. Under parts very pale gray or grayish white; pileum metallic blue or greenish blue; bill longer (culmen averaging 27.3 in adult male, 26.6 in adult female). (Vera Cruz, San Luís Potosí, etc., to Campeche and Oaxaca.)

Pampa pampa curvipennis (p. 355).

## PAMPA PAMPA PAMPA (Lesson).

## WEDGE-TAILED SABRE-WING.

*Adult male*.—Pileum bright metallic violet or royal purple; rest of upper parts metallic green or bronze-green, the upper tail-coverts more bluish green; tail dull metallic bluish green,<sup>a</sup> passing into purplish black or blackish violet terminally, this occupying most of inner web (except on middle pair of rectrices), the outer web of lateral rectrix brownish gray in middle portion, dusky basally; remiges purplish dusky; under parts, including malar and loreal regions, brownish gray or drab-gray, the auricular region similar but darker; a postocular spot of dull white; maxilla dull black; mandible brownish (in dried skins), dusky terminally; feet brownish (in dried skins); length (skins), 115–131 (123); wing, 66–72 (68); tail, 48–59.5 (53.2); culmen, 23–25.5 (24.5).<sup>b</sup>

*Adult female*.—Similar to the adult male, but two outer rectrices (on each side) broadly tipped with brownish gray, the outermost with terminal third, or more, of outer web also brownish gray, and with violet of crown slightly duller; length (skins), 116; wing, 62–64.5 (62.8); tail, 43.5–45 (44.3); culmen, 24.<sup>c</sup>

Guatemala (Cobán; Choctúm; Chiséc; Guatemala City) and Yucatan (Izalám; Tizimín; La Vega).

*Ornismya pampa* LESSON, Hist. Nat. Colibr., Suppl. Ois.-Mouch., 1830–31, 127, pl. 15 ("Paraguay"; error); Index Gen. and Syn. Troch., 1832, p. vi ("Paraguay").

*Polytmus pampa* GRAY, Gen. Birds, i, Dec., 1848, 107.

[*Polytmus pampa* GRAY, Hand-list, i, 1869, 125, no. 1568.

[*Campylopterus pampa* BONAPARTE, Consp. Av., i, 1850, 71 ("Paraguay").

*Campylopterus pampa* BONAPARTE, Rev. et Mag. de Zool., 1854, 250.—GOULD, Mon. Troch., pt. x, 1855, pl. 43 (vol. ii, 1861, pl. 43), part (Guatemala).—SCLATER and SALVIN, Ibis, 1859, 127 (Guatemala).—SALVIN, Ibis, 1860, 260 (Cobán, Guatemala).—MULSANT and VERREAUX, Classif. Troch., 1866, 22, part (Guatemala); Hist. Nat. Ois.-Mouch., i, livr. 2, 1874, 115, part (Guatemala).

*Sphenoproctus pampa* (not of Cabanis and Heine, 1860) GOULD, Introd. Troch., oct. ed., 1861, 51.—MULSANT, Ann. Soc. Linn. Lyon, xxii, 1876, 201.—ELLIOT, Classif. and Synop. Troch., 1879, 23.—BOUCARD, Liste Ois. récol. Guat., 1878, 44; Proc. Zool. Soc. Lond., 1883, 450 (Izalám and Tizimín, Yucatan; habits); Gen. Hum. Birds, 1895, 349 (Guatemala).—RIDGWAY, Proc. U. S. Nat. Mus., iii, 1880, 309 (Guatemala).—SALVIN, Cat. Birds Brit.

<sup>a</sup> Nearest terre-verte.

<sup>b</sup> Ten specimens.

<sup>c</sup> Three specimens.



Mus., xvi, 1892, 286 (Choctúm, Chisec, and Cobán, Guatemala).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 321.

*Pampa pampa* ELLIOT, Classif. and Synop. Troch., 1879, 22, in text.

[*Sphenoproctus*] *pampa* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 79.

*Sphenoproctus* (*Campylopterus*) *pampa* Mulsant and Verreaux, Hist. Nat. Ois.-Mouch., iv, livr. 2, 1877, 147 (Guatemala).

*Pampa campyloptera* REICHENBACH, Anz. der Colibr., 1854, 11; Troch. Enum., 1855, 9, pl. 800, figs. 4861, 4862.

[*Pampa*] *lessoni* SIMON, Cat. Troch., 1897, 8 (Guatemala).—SHARPE, Hand-list, ii, 1900, 101 (Guatemala; n. Yucatan).

*P[ampa] lessoni* HARTERT, Das Tierreich, Troch., 1900, 30 (monogr.).

### PAMPA PAMPA CURVIPENNIS (Lichtenstein).

#### CURVE-WINGED SABER-WING.

Similar to *P. p. pampa* but bill decidedly longer, under parts much paler (dull grayish white instead of drab-gray), and pileum duller and more greenish or less violaceous blue.

*Adult male*.—Pileum rather dull metallic violet-blue, varying to greenish blue; rest of upper parts bright metallic bronze or bronze-green, the middle pair of rectrices varying from bronze-green to bluish green, the next pair similar but passing into blackish terminally, the rest mostly dull black (faintly glossed) with basal portion of outer web bronze-green, the outermost edged for terminal half (more or less) with grayish brown (sometimes with outer web mostly of this color) and sometimes with a streak of the same near shaft; remiges dark brownish slate or dusky, very faintly glossed with purplish bronzy; auricular and suborbital regions brownish gray; loreal and malar regions, together with whole of under parts very pale gray or dull grayish white, the under tail-coverts inclining more or less to brownish buff (sometimes decidedly of this color) with the central or mesial portion indistinctly dull grayish; bill dull black; iris dark brown; feet dusky brownish (in dried skins); length (skins), 129–143 (136); wing, 65–68.5 (66.8); tail, 50–55.5 (52.5); culmen, 26–29.5 (27.3).<sup>a</sup>

*Adult female*.—Similar to the adult male but middle rectrices less elongated, lateral rectrices broadly tipped with dull gray, and blue of pileum usually duller, sometimes replaced on forehead with dull dusky grayish; length (skins), 120–130 (125); wing, 60–68 (63.6); tail, 46–50 (47.4); culmen, 26–27.5 (26.6).<sup>b</sup>

*Young*.—Similar to adults but under parts tinged or suffused with brownish buffy.<sup>c</sup>

<sup>a</sup> Nine specimens.

<sup>b</sup> Four specimens.

<sup>c</sup> A specimen in the Biological Survey Collection (no. 158756, coll. U. S. Nat. Mus.) from Metlatoyuca, Puebla, with sex determined as male by the collector but probably a female or immature male, differs from all other specimens examined in having the green of back, etc., much more bronzy and blue of pileum decidedly greenish.

Southeastern Mexico, in States of San Luís Potosí (Jilitla), Puebla (Metlaltoyuca), Vera Cruz (Jalapa; Córdova; Miradór; Orizaba; Coátepec; Colipa; Atoyác; Misantla; Cuesta de Misantla), Oaxaca (Teotalcingo), and Campeche (Apazote).<sup>a</sup>

*Trochilus curvipennis* LICHTENSTEIN, Preis-Verz. Mex. Vög., 1830, i, no. 32; Journ. für Orn., 1863, 55 (Mexico).

*Sphenoproctus curvipennis* GOULD, Introd. Troch., oct. ed., 1861, 51.—MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., iv,\*1877, 147 (Mexico).—MULSANT, Ann. Soc. Linn. Lyon, xxii, 1876, 201.—ELLIOT, Classif. and Synop. Troch., 1879, 23.—RIDGWAY, Proc. U. S. Nat. Mus., iii, 1880, 309 (Miradór, Vera Cruz).—FERRARI-PEREZ, Proc. U. S. Nat. Mus., ix, 1886, 156 (Jalapa, Vera Cruz).—SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 287 (Misantla, Colipa, Cuesta de Misantla, Coátepec, Jalapa, and Atoyác, Vera Cruz).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 322.—BOUCARD, Gen. Hum. Birds, 1895, 350.—CHAPMAN, Bull. Am. Mus. N. H., x, 1898, 33 (Jalapa; habits; notes).—LANTZ, Trans. Kans. Ac. Sci. for 1896-97 (1899), 221 (Coátepec, Vera Cruz).

[*Sphenoproctus*] *curvipennis* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 79.—BOUCARD, Notes quelques Troch., 1873, 4 (Córdova and Jalapa; habits).—MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., i, liv. ii, 1874, 117 (in text).

*P[ampa] curvipennis* HARTERT, Das Tierreich, Troch., 1900, 30 (monogr.).

[*Pampa*] *curvipennis* SIMON, Cat. Troch., 1897, 8.—SHARPE, Hand-list, ii, 1900, 101.

*Campylopterus pampa*, var. *curvipennis* MULSANT and VERREAUX, Classif. Troch., 1866, 22.

[*Polytmus*] *curvipennis* GRAY, Hand-list, i, 1869, 125, no. 1569.

*Campylopterus pampa* (not *Ornismya pampa* Lesson) SCLATER, Proc. Zool. Soc. Lond., 1856, 287 (Córdova); 1859, 367, 385 (Teotalcingo, Oaxaca); Cat. Am. Birds, 1862, 287 (Mexico).—MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., i, livr. 2, 1874, 115, part (Mexico).—D'OCA, Proc. Ac. Nat. Sci. Phila., 1860, 551 (habits); La Naturaleza, iii, 1875, 30; Troq. de Mex., 1875, 25, pl. (3), fig. 12.—SANCHEZ, An. Mus. Nac. Mex., i, 1877, 96 (Orizaba).

*S[phenoproctus] pampa* CABANIS and HEINE, Mus. Hein., iii, 1860, 11 (Jalapa).

*Uranomitra quadricolor* (not *Trochilus quadricolor* Vieillot) RIDGWAY, Proc. U. S. Nat. Mus., iii, 1880, 317, part (Orizaba; =very young; see Berlepsch, Proc. U. S. Nat. Mus., ix, 1888, 562).

### Genus CAMPYLOPTERUS Swainson.

*Campylopterus* SWAINSON, Zool. Journ., ii, 1826, 358. (Type, *Trochilus largipennis*, Boddaert.)

*Sacpiopterus* REICHENBACH, Aufz. der Colib., 1854, 11. (Type, *Trochilus lazulus* Vieillot.)

*Platystylopterus* REICHENBACH, Aufz. der Colib., 1854, 11. (Type, *Campylopterus rufus* Lesson.)

*Loxopterus*<sup>b</sup> CABANIS and HEINE, Mus. Hein., iii, Feb., 1860, 13. (Type, *Campylopterus hyperythrus* Cabanis.)

<sup>a</sup>The specimen from Apazote, Campeche, is intermediate between *P. pampa* and *P. pampa curvipennis*, but nearer the latter.

<sup>b</sup>“Von *λοῦός*, Krumm, und *πτερόν*, Flügel.” (Cabanis and Heine.)

Large Trochilidæ (length about 115–140 mm.) with bill much longer than head, straight to decidedly decurved; tail two-thirds to three-fourths as long as wing, slightly rounded; very weak feet; and shafts of outer primaries thickened basally (in adult males excessively so).

Bill slightly longer than head (in *C. hyperythrus*) to one and a half times as long, straight (*C. hyperythrus*, *C. rufus*, *C. largipennis*, and *C. obscurus*) to decidedly decurved (*C. ensipennis*, *C. hemileucurus*, *C. lazulus*, and *C. villavicencio*); tomia smooth; both mandible and maxilla with a distinct lateral groove, the former on basal half, mainly. Nostril narrow, slit-like, overhung by a broad, convex, tumid, mostly unfeathered membrane, but frontal feathering reaching to or beyond middle of upper portion. Tarsus densely feathered, slender, about as long as anterior toes; middle and inner toes equal in length, the inner very slightly shorter; hallux decidedly shorter than outer toe; middle toe united to outer for whole of its basal phalanx, to inner toe for less than distance; all the toes weak and slender, and claws relatively small. Wing about three times as long as exposed culmen, the outermost primary longest; three outer primaries with shafts more or less thickened basally, especially in adult males, in which the shaft of the outermost is greatly enlarged and strongly bowed toward middle portion. Tail two-thirds to three-fourths as long as wing, slightly rounded, the rectrices very broad, rounded terminally (in *C. obscurus* tapering and pointed terminally).

*Coloration*.—*a. Saepiopterus*: Metallic green or green and violet above, the tail black, with lateral rectrices extensively white terminally, or (in *C. lazulus*) chestnut tipped with green; adult males with under parts metallic blue or violet, or green with violet throat; adult females with under parts gray mixed with green on sides and blue on throat. *b. Campylopterus*: Above metallic bronze green, including middle rectrices, the outer rectrices blackish with broad white tips; beneath wholly light gray; sexes alike. (*C. largipennis*, *C. obscurus*.) *c. Platystylopterus*: Above metallic bronze green, the middle rectrices greenish bronze or golden bronze; other rectrices (at least in part) light cinnamon-rufous; under parts wholly light cinnamon-rufous. Sexes alike, or very nearly so.

Although for present purposes it may be as well to retain the genus *Campylopterus* with its generally recognized limits I am convinced that the genus as so recognized is not a natural group, but a combination of at least two and probably three generic groups, as indicated in the paragraph describing coloration. The species with uniform gray under parts (in both sexes) closely resemble those of the genus *Pampa* in coloration (except for the absence of a blue or violet frontal patch), and the relationship is still further indicated by the form of the rectrices in *C. obscurus*, for, while the tail is slightly rounded (not gradu-



ated, as in *Pampa*) the rectrices are distinctly narrowed terminally. The bill, moreover, in all the species of the group (true *Campylopterus*) is straight, as in *Pampa*, though less broad and depressed basally.

KEY TO THE SPECIES OF CAMPYLOPTERUS.

- a. Under parts metallic blue or violet (adult male), dusky (young male), or gray with blue on throat (female); lateral rectrices broadly tipped with white. (South-eastern Mexico to western Panamá.).....*Campylopterus hemileucurus* (p. 358).
- aa. Under parts light cinnamon-rufous or vinaceous-cinnamon (in both sexes); lateral rectrices broadly tipped with light cinnamon-rufous. (Guatemala.)  
*Campylopterus rufus* (p. 361).

CAMPYLOPTERUS HEMILEUCURUS (Lichtenstein).

DE LATTRE'S SABRE-WING.

*Adult male*.—Forehead and crown dusky, faintly glossed with bluish green; occiput, hindneck, upper back (at least partly), auricular, suborbital, and malar regions, and under parts from chin to anal region (inclusive), bright metallic violet-blue to bluish violet, occasionally varying, in places, to more greenish blue, the feathers dusky or blackish subterminally, grayish basally; lower back mixed violet-blue and green or bluish green; scapulars, wing-coverts, rump, and upper tail-coverts metallic green or bluish green, the feathers of rump sometimes tipped with blue; tail bluish black, the middle pair of rectrices usually tinged with green, the three outermost (on each side) very broadly tipped with white, this on lateral pair occupying much more than terminal third; remiges dull blackish or dusky, faintly glossed with purplish; under tail-coverts dull dark metallic green or (partly) greenish blue; conspicuous femoral tufts white or grayish white; bill black; iris dark brown; legs and feet dusky; length (skins), 136–154 (142); wing, 76.5–82.5 (79.5); tail, 52.5–60 (56.8); culmen, 26–31 (28.9).<sup>a</sup>

*Adult female*.—Above bright metallic green or bronze-green, much duller (sometimes dusky glossed with bronze) on forehead and crown, appearing more bluish green when viewed from in front, especially on upper tail-coverts; middle rectrices duller and more bluish green; lateral rectrices and remiges as in adult male, but former glossed with bluish green on basal portion of outer webs; under parts gray, paler on abdomen, glossed with metallic green laterally (especially on sides and flanks), the throat spotted with bright metallic blue or violet-blue, often forming a solid patch of this color; bill, etc., as in adult male;

<sup>a</sup> Thirty-eight specimens.

length (skins), 128-143 (136); wing, 68.5-78 (73.9); tail, 50.5-56 (53.6); culmen, 30-35.5 (32.1).<sup>a</sup>

*Young male*.—Above similar in coloration to adult female; below dusky, glossed with bluish green, older specimens showing blue or violet feathers of the adult dress appearing first on median line of throat and center of breast.

*Young female*.—Similar to adult female but green of upper parts more bronzy and throat with little if any metallic blue.

Southern Mexico, in States of Vera Cruz (Jalapa; Córdoba; Orizaba; Huatusco; Coátepec; Playa Vicente), Mexico (near City of Mexico), Guerrero (Chilpancingo; Omilteme), Oaxaca (Teotalcingo; Chimalapa; Tehuántepec; Sierra de Santo Domingo), Tabasco (Teapa), and Chiapas (Tumbalá; Gineta Mountains), and southward through Guatemala (Choctúm; Cobán; Dueñas; Guatemala City; Gualán; Kamkál; Volcán de Fuego; Volcán de Agua; Totonicapám; Retalhuleu), British Honduras (Manatee Lagoon), Honduras (Santa Ana), Nicaragua (Matagalpa; San Rafael, Lake Nicaragua), and Costa Rica (Cerro de la Candelária; Escazú; Volcán de Irazú; La Estrella de Cartago; Navarro de Cartago; Azahár de Cartago; La Palma de San José; Tucurríqui; La Hondura; Juan Viñas; Tres Ríos; Rancho Redondo; Cerro de Santa Maria; San Pedro; Santa Maria de Dota; Ojuras de Térraba) to western Panamá (Boquete; Volcán de Chiriquí; Calovévora; Chitra; Cordillera del Chucu).

*Trochilus hemileucurus* LICHTENSTEIN, Preis.-Verz. Mex. Vög., 1830, 1 (Mexico); Journ. für Orn., 1863, 56.

<sup>a</sup> Thirty specimens.

| Locality.                                                 | Wing. | Tail. | Ex-<br>posed<br>culmen. |
|-----------------------------------------------------------|-------|-------|-------------------------|
| MALES.                                                    |       |       |                         |
| Ten adult males from southeastern Mexico.....             | 79.7  | 56    | 27.6                    |
| Seven adult males from Chiapas (3) and Guatemala (4)..... | 80.7  | 55.6  | 28.5                    |
| One adult male from British Honduras.....                 | 82    | 55.5  | 27.5                    |
| Ten adult males from Costa Rica.....                      | 79.9  | 58.2  | 29.9                    |
| Ten adult males from Panamá.....                          | 77.6  | 56.9  | 29.8                    |
| FEMALES.                                                  |       |       |                         |
| Five adult females from southeastern Mexico.....          | 75.2  | 53.1  | 31.3                    |
| Six adult females from Chiapas (1) and Guatemala (5)..... | 74.5  | 52.7  | 31.4                    |
| Two adult females from Honduras and British Honduras..... | 76.7  | 54    | 30.7                    |
| Ten adult females from Costa Rica.....                    | 73.9  | 54    | 33                      |
| Seven adult females from Panamá.....                      | 71.6  | 53.9  | 32.5                    |

After careful comparison of seventy adult males and thirty-two adult females I am unable to appreciate any constant color differences between specimens from different geographic areas.

- [Campylopterus] hemileucurus* CABANIS and HEINE, Mus. Hein., iii, 1860, 13 (Mexico; Guatemala).—HARTERT, Das Tierreich, Troch., 1900, 32 (monogr.).
- Campylopterus hemileucurus* GOULD, Introd. Troch., oct. ed., 1861, 52.—CABANIS, Journ. für Orn., 1862, 162 (San José, Costa Rica).—SCLATER, Cat. Am. Birds, 1862, 288 (Cobán, Guatemala); Proc. Zool. Soc. Lond. 1864, 176 (near City of Mexico).—SALVIN, Proc. Zool. Soc. Lond., 1870, 205 (Cordillera del Chucu, Chitra and Calovévora, Panamá); Cat. Birds Brit. Mus., xvi, 1892, 291, 664 (Jalapa, Huatusco, and Playa Vicente, Vera Cruz; Omilteme, Guerrero; Tehuantepec, Chimalapa, and Sierra San Domingo, Oaxaca; Cobán, Kamkál, Volcán de Fuego, V. de Agua, Totonicapám, and Retalhuleu, Guatemala; Costa Rica; Calovévora, Cordillera del Chucu, and Boquete del Chitra, Panamá).—LAWRENCE, Ann. Lyc. N. Y., ix, 1868, 121 (Costa Rica).—FRANTZIUS, Journ. für Orn., 1869, 315 (Costa Rica).—LAWRENCE, Bull. U. S. Nat. Mus., no. 4, 1876, 32 (Gineta Mts., Chiapas).—BOUCARD, Liste Ois. récol. Guat., 1878, 45 (Guatemala); Proc. Zool. Soc. Lond., 1878, 68 (Tres Rios and Rancho Redondo, Costa Rica; habits); Gen. Hum. B., 1895, 356.—SUMICHRAST, La Naturaleza, v, 1881, 250 (Orizaba, Vera Cruz; Gineta Mts., Chiapas).—ELLIOT, Classif. and Synop. Troch., 1879, 26.—RIDGWAY, Proc. U. S. Nat. Mus., iii, 1880, 310 (Jalapa, Vera Cruz; Honduras; Guatemala; Costa Rica; Veragua).—ZELEDÓN, Cat. Aves de Costa Rica, 1882, 20; Anal. Mus. Nac. Costa Rica, i, 1887, 121 (La Palma de San José, Costa Rica).—NUTTING, Proc. U. S. Nat. Mus., v, 1882, 501 (San José, Costa Rica).—FERRARI-PEREZ, Proc. U. S. Nat. Mus., ix, 1886, 157 (Jalapa).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 323.—HARTERT (E. and C.), Novit. Zool., i, 1894, 21 (Chilpancingo, Guerrero).—LANTZ, Trans. Kans. Ac. Sci. for 1896-97 (1899), 221 (Coátepec, Vera Cruz).
- [Campylopterus] hemileucurus* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 79.—SHARPE, Hand-list, ii, 1900, 102.
- [Polytmus] hemileucurus* GRAY, Hand-list, i, 1869, 124, no. 1559.
- Sæpiopterus hemileucurus* BOUCARD, The Hum. Bird, ii, 1892, 86 (Veragua).
- Ornismyia de lattei* "Lesson" DELATTRE and LESSON, Rev. Zool., ii, 1839, 19 (Jalapa, Vera Cruz, Mexico).
- [Mellisuga] delattrei* GRAY, Gen. Birds, i, Dec. 1848, 113.
- [Campylopterus] delattrei* REICHENBACH, Aufz. der Colibr., 1854, 11; Troch. Enum., 1855, 9, pl. 804, figs. 4869, 4870.—BOUCARD, Notes quelques Troch., 1873, 4 (Córdova and Jalapa, Vera Cruz; Cobán, Guatemala; habits).
- Campylopterus delattrei* GOULD, Mon. Troch., pt. x, 1855 (vol. ii, pl. 45).—D'OCA, Proc. Ac. Nat. Sci. Phila., 1868, 47 (habits).—MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., i, livr. 2, 1874, 134 (Córdova, Jalapa, Orizaba, and Coátepec, Vera Cruz; Cobán, Guatemala); iv, livr. 2, 1877, 149.—MULSANT, Ann. Soc. Linn. Lyon, xxii, 1876, 202.
- Campylopterus delatirii* SCLATER, Proc. Zool. Soc. Lond., 1856, 287 (Mexico); 1859, 367 (Jalapa), 385 (Teotalcingo, Oaxaca).—MOORE, Proc. Zool. Soc. Lond., 1859, 53 (Guatemala).—SCLATER and SALVIN, Ibis, 1859, 127 (Cobán, Guatemala).—SALVIN, Ibis, 1860, 195 (Cobán; habits), 260 (Cobán, Guatemala; habits).
- [Campylopterus] delattrei* BONAPARTE, Consp. Av., i, 1850, 71.
- [Campylopterus] delatirii* BONAPARTE, Rev. et Mag. Zool., 1854, 250.
- Campylopterus delatirii* D'OCA, Troq. de Mex., 1875, pl. (1), fig. 4.
- Campylopterus hemileucurus mellitus* BANGS, Proc. New Engl. Zool. Club, iii, Jan. 30, 1902, 28 (Boquete de Chiriquí, Panamá, 4,800 ft.; coll. E. A. and O. Bangs).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 521 (plateau region Costa Rica; habits).



## CAMPYLOPTERUS RUFUS Lesson.

## RUFous SABRE-WING.

*Adult male*.—Above bright metallic bronze-green or greenish bronze, becoming more bronzy on upper tail-coverts and middle rectrices, the pileum slightly darker and duller, with feathers narrowly and indistinctly margined with dusky; middle pair of rectrices wholly metallic bronze or greenish bronze, the next pair similar but with a broad, ill-defined, subterminal band of blackish and tipped with cinnamon; next pair similar but with basal half or more of outer web (less on inner web) deep vinaceous-cinnamon or cinnamon-rufous, the blackish subterminal band more sharply defined and the cinnamon tip broader; next pair with outer web cinnamon-rufous almost if not quite to the black subterminal band and inner web with the same color proportionally increased in extent, the cinnamonous tip still broader; outermost pair with outer web wholly cinnamon-rufous (paling slightly terminally), the inner web the same color but interrupted by a broad subterminal band of black preceded anteriorly by a narrow one of greenish bronze; remiges dusky, faintly glossed with violaceous; under parts plain vinaceous-cinnamon, slightly paler medially, the downy femoral tufts white; maxilla dull black, mandible dusky brownish (in dried skins); iris dark brown; feet light grayish brown (in dried skins); length (skins), 127–138 (132); wing, 71–76 (73.5); tail, 47.5–51.5 (49.2); culmen, 25–27.5 (26.3).<sup>a</sup>

*Adult female*.—Similar in coloration to the adult male but black subterminal area on inner web of lateral rectrix roundish instead of quadrate, and shafts of outer primaries not conspicuously thickened; length (skins), 121–135 (128); wing, 68.5–74.5 (71.5); tail, 49.5–50 (49.7); culmen, 26–26.5 (26.2).<sup>b</sup>

Highlands of Guatemala, 5,000–7,000 feet altitude (Guatemala City; Dueñas; Atitlán; Volcán de Fuego; plains near Pacicia and Patzún).

*Campylopterus rufus* LESSON, Rev. Zool., 1840, 73 (loc. ignot.).—BONAPARTE, Consp. Av., i, 1849, 71; Rev. et Mag. de Zool., 1854, 250.—GOULD, Mon. Troch., pt. iii, 1852 (vol. ii, 1861), pl. 50; Introd. Troch., oct. ed., 1861, 54.—SCLATER and SALVIN, Ibis, 1859, 127 (Dueñas and Atitlán, Guatemala).—SALVIN and SCLATER, Ibis, 1860, 38 (Dueñas; habits).—SALVIN, Ibis, 1860, 195, 263, 264; Cat. Birds Brit. Mus., xvi, 1892, 294, 664.—SCLATER, Cat. Am. Birds, 1862, 288 (Dueñas, Guatemala).—MULSANT and VERREAUX, Classif. Troch., 1866, 22; Hist. Nat. Ois.-Mouch., i, livr. 2, 1874, 133.—MULSANT, Ann. Soc. Linn. Lyon, xxii, 1876, 202.—ELLIOT, Classif. and Synop. Troch., 1879, 25.—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 324 (Dueñas, Volcán de Fuego, and plains near Pacicia and Patzún, Guatemala; Volcan de San Miguel, Salvador).—RIDGWAY, Proc. U. S. Nat. Mus., iii, 1880, 310 (Dueñas; Guatemala City).—DEARBORN, Pub. 125, Field Mus. N. H., 1907, 96 (Lake Atitlán, Guatemala).

<sup>a</sup> Five specimens.

<sup>b</sup> Four specimens.

[*Campylopterus*] *rufus* SCLATER and SALVIN. Nom. Av. Neotr., 1873, 79.—  
SHARPE, Hand-list, ii, 1900, 102.

*C[ampylopterus]* *rufus* HARTERT, Das Tierreich, Troch., 1900, 33 (monogr.).

*P[olytmus]* *rufus* GRAY, Gen. Birds, i, Dec., 1848, 107.

*[Polytmus]* *rufus* GRAY, Hand-list, i, 1869, 124, no. 1565.

*Platystylopterus rufus* REICHENBACH, Aufz. der Colibr., 1854, 11; Troch. Enum.,  
1855, 8, pl. 789, figs. 4834-5.

*Saepiopterus rufus* BOUCARD, Gen. Hum. Birds, 1895, 360.

### Genus PHÆOCHROA Gould.

*Phæochroa a* GOULD, Introd. Troch., oct. ed., 1861, 55. (Type, *Trochilus cuvieri*  
Delattre and Bourcier.)

Rather large Trochilidæ (length about 115-120 mm.) with bill slightly longer than head, strong, nearly straight, narrowly cuneate in vertical profile; wing about three times as long as exposed culmen, the outer primary longest, its shaft more or less thickened toward base, especially in adult males; tail more than three-fifths as long as wing, slightly or moderately rounded, the rectrices rather broad but contracted terminally where narrowly rounded; plumage very dull—dull metallic bronze-green above, pale dull bronze-greenish on anterior under parts, the posterior under parts pale grayish buffy; lateral rectrices dull black, broadly tipped with white or whitish. Sexes alike in color.

Bill slightly to decidedly longer than head, stout, nearly straight, broader than deep (except terminally), narrowly cuneate in vertical profile; tomia smooth; culmen indistinctly ridged (distinctly so basally); maxilla and mandible with lateral sulci rather indistinct. Nostril narrow, slit-like, overhung by a rather narrow, straight-edged (or at least not distinctly convex) operculum, feathered on its upper and posterior portions. Tarsus feathered only on upper anterior portion, rather stout, slightly shorter than middle and inner toes, these equal in length, the outer slightly shorter; hallux slightly shorter than anterior toes; middle toe united to outer for whole of its basal phalanx, to inner toe for nearly as much; toes and claws moderately strong. Wing at least three times as long as exposed culmen, the outermost primary longest, its shaft very rigid, more or less thickened basally (especially in adult males). Tail more than three-fifths as long as wing, slightly to moderately rounded, the rectrices rather broad but somewhat abruptly contracted terminally into a rounded point.

*Coloration*.—Dull bronze-green above, paler dull bronze-green anteriorly beneath, with pale dull buffy margins to feathers, the abdomen plain dull buffy, the under tail-coverts bronzy grayish, margined with white; lateral rectrices black, broadly tipped with white or whitish. Sexes alike in color.

*Range*.—Guatemala to Colombia and Venezuela. (Two species.)

While closely resembling, superficially, the type species of *Aphantochroa* Gould, this genus differs in relatively longer tail (more, instead of less, than three-fifths as long as wing), ridged instead of rounded culmen, and less distinct lateral sulci of maxilla and mandible. The coloration is very similar but *Aphantochroa* lacks the white tips to the lateral rectrices, so conspicuous in both sexes of both species of *Phæochroa*. The two groups are, however, very closely related, and *Phæochroa* undoubtedly is more nearly allied to *Aphantochroa* than to *Campylopterus*.

KEY TO THE SPECIES AND SUBSPECIES OF PHÆOCHROA.

- a. Basal half (approximately) of mandible pale brownish or whitish (reddish or pinkish in life); lateral rectrices extensively bronze-greenish basally. (*Phæochroa cuvieri*.)
  - b. Green of under parts paler; abdomen paler, more buffy; bill slightly shorter. (Western Costa Rica to northern Colombia; coast of Venezuela?)  
*Phæochroa cuvierii cuvierii* (p. 363).
  - bb. Green of under parts darker; abdomen darker and more brownish; bill slightly longer. (Coiba Island, Bay of Panamá.)  
*Phæochroa cuvierii saturator* (p. 365).
- aa. Mandible wholly dusky; lateral rectrices with little if any bronze-green on basal portion. (Guatemala and British Honduras to eastern Nicaragua.)  
*Phæochroa roberti* (p. 365).

PHÆOCHROA CUVIERII CUVIERII (Delattre and Bourcier).

CUVIER'S HUMMING BIRD.

*Adults (sexes alike)*.—Above metallic bronze-green (sometimes more bronzy posteriorly), the tail usually more bluish or silvery green; lateral pair of rectrices extensively grayish white terminally (usually tinged on outer web with gray),<sup>a</sup> this separated from the bronze-greenish basal portion by an ill-defined band of dull blackish or dusky, the second pair with a less extensive, but still conspicuous, whitish tip, the third sometimes slightly tipped with grayish; remiges dark brownish slate or dusky, faintly glossed with purplish; chin, throat, chest, and sides of breast rather dull metallic bronze or bronze-green, the feathers narrowly margined with dull grayish buffy or pale buffy grayish; flanks, abdomen, and median line of breast pale isabella color or pale, dull brownish buffy, the first glossed with bronze or bronze-green; femoral tufts and tuft on each side of rump white, the latter usually intermixed with pale grayish; under tail-coverts dull metallic bronze or bronze-greenish, broadly margined with white; bill dull black, the basal half (more or less) of mandible pale brownish or whitish (fleshy or pinkish in life); iris dark brown, feet dusky.

<sup>a</sup> Sometimes there is a bronze-dusky spot at tip of outer web.



*Adult male*.—Length (skins), 113–122 (118); wing, 66.5–75.5 (72.2); culmen, 21–24 (22.4).<sup>a</sup>

*Adult female*.—Length (skins), 110–124 (117); wing, 63.5–73 (68.6); tail, 40.5–46.5 (43.7); culmen, 21.5–24.5 (23).<sup>b</sup>

*Young*.—Similar to adults, but feathers of upper parts (especially the rump) margined terminally with pale buffy brownish.

Western Costa Rica (Miravalles; Bebedero; Punta Arenas; Esparta; Pigres; Bolsón; Boruca; Buenos Aires; Pozo Azul de Pirrís; El General; San Pedro), Panamá (David; Bugaba; Panamá; Paraiso; Loma del León), and north coast of Colombia (Barranquilla); coast of Venezuela?

*[Trochilus] cuvierii* DELATTRE and BOURCIER, Rev. Zool., 1846, 310, part (Isthmus of Panamá; coll. Delattre, now in Phila. Acad.).

*[Campylopterus] cuvieri* BONAPARTE, Consp. Av., i, 1850, 71.

*[Campylopterus] cuvierii* REICHENBACH, Troch. Enum., 1855, 9, pl. 805, fig. 4871.

*Campylopterus cuvieri* GOULD, Mon. Troch., pt. xii, 1856, pl. 52 (vol. ii, 1861, pl. 52).—LAWRENCE, Ann. Lyc. N. Y., vii, 1862, 319 (Lion Hill, Panamá).—MULSANT and VERREAUX, Classif. Troch., 1866, 22.—ELLIOT, Classif. and Synop. Troch., 1879, 27.—ZELEDÓN, Cat. Aves de Costa Rica, 1882, 20; Anal. Mus. Nac. Costa Rica, 1887, 121 (Pozo Azul de Pirrís, Costa Rica).—BOUCARD, The Hum. Bird, ii, 1892, 86 (Verágua).

*[Aphantochroa] cuvieri* BONAPARTE, Rev. et Mag. de Zool., 1854, 250.—SIMON, Cat. Troch., 1897, 9.—SHARPE, Hand-list, ii, 1900, 103.

*Aphantochroa cuvieri* MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., i, livr. 2, 1874, 137 (Venezuela; Colombia; Panamá; Verágua); iv, livr. 2, 1877, 150.—BANGS, Auk, xxiv, 1907, 295 (Boruca, Costa Rica).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 523 (Pacific coast, Costa Rica; habits).

*[Aphantochroa] cuvieri* CABANIS and HEINE, Mus. Hein., iii, 1860, 14 (Verágua).—HARTERT, Das Tierreich, Troch., 1900, 37 (monogr.).

*Phæochroa cuvieri* GOULD, Introd. Troch., oct. ed., 1861, 55.—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1864, 365 (Lion Hill, Panamá).—SALVIN, Proc. Zool. Soc. Lond., 1867, 153 (David, Panama); 1870, 205 (Bugaba, Panamá); Cat. Birds Brit. Mus., xvi, 1892, 299 (Punta Arenas, Miravalles, and Bebedero, Costa Rica; Bugaba, David, Panamá, Lion Hill, and Paraiso Station, Panamá).—LAWRENCE, Ann. Lyc. N. Y., ix, 1868, 121 (Gulf of Nicoya, Costa Rica).—MULSANT, Ann. Soc. Linn. Lyon, xxii, 1876, 202.—FRANTZIUS, Journ. für Orn., 1869, 315 (Costa Rica).—BERLEPSCH, Journ. für Orn., 1887,

<sup>a</sup> Thirteen specimens.

<sup>b</sup> Nineteen specimens.

| Locality.                                                  | Wing. | Tail. | Ex-<br>posed<br>culmen. |
|------------------------------------------------------------|-------|-------|-------------------------|
| MALES.                                                     |       |       |                         |
| Three adult males from Panamá (Loma del León).....         | 68    | 43    | 22.8                    |
| Ten adult males from Costa Rica.....                       | 73.4  | 44.2  | 22.3                    |
| FEMALES.                                                   |       |       |                         |
| Nine adult females from Panamá (8 from Loma del León)..... | 68.4  | 43.3  | 22.6                    |
| Ten adult females from Costa Rica.....                     | 68.7  | 44    | 23.4                    |

335 (Barranquilla, Colombia).—CHERRIE, Expl. Zool. Merid. Costa Rica, 1893, 45 (Boruca and Buenos Aires, s. w. Costa Rica).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 326 (Colombia?; Venezuela?, etc.).—BOUCARD, Gen. Hum. Birds, 1895, 353, part (Costa Rica; Chiriquí; Colón).—RIDGWAY, Condor, vii, 1905, 154, in text (Pigres, Costa Rica).

[*Phæochroa*] *curieri* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 80.

[*Polytmus*] *cuvieri* GRAY, Hand-list, i, 1869, 125, no. 1573.

[*Caligena*] *clemenciae* (not *Ornismya clemenciae* Lesson) REICHENBACH, Troch. Enum., 1855, 3, pl. 687, fig. 4517, part (supposed female).

*Aphantochroa cirrhochloris* (not *Trochilus cirrhochloris* Gmelin) BANGS, Proc. New Engl. Zool. Club, ii, 1900, 19 (Loma del León, Panamá).

### PHÆOCHROA CUVIERII SATURATION (Hartert).

#### COIBA ISLAND HUMMING BIRD.

Similar to *P. c. cuvierii*, but green of throat, chest, and breast much deeper, abdomen darker (brownier), and bill slightly longer.

Coiba Island, Bay of Panamá.

This form I have not seen, but it seems, judging from the original description (which omits measurements), to be quite well marked.

*Aphantochroa cuvierii saturation* HARTERT, Bull. Brit. Orn. Club, xii, no. lxxxiv, Dec. 30, 1901, 33 (Coiba Island, Bay of Panamá; coll. Tring Mus.).

### PHÆOCHROA ROBERTI (Salvin).

#### OWEN'S HUMMING BIRD.

Similar to *P. cuvierii* but mandible wholly dusky and lateral rectrices (except for whitish tip) wholly dusky or with bronze-greenish at base only.

*Adults (sexes alike)*.—Above metallic bronze or bronze-green, the middle pair of rectrices usually more bluish or silvery green; rectrices next to middle pair bronze-green tipped with dusky; next pair similar but more extensively dusky terminally, sometimes with a small apical spot of white; next pair with less than basal half bronze-green, the rest blackish, with a large terminal cuneate or guttate spot of white; lateral pair black to or near extreme base, the white terminal spot still larger (sometimes with a small dusky area on outer terminal portion of outer web); remiges dusky or dark brownish slate, faintly glossed with purplish; chin, throat, chest, and sides rather dull metallic bronze or bronze-green, the feathers narrowly margined with pale grayish buffy; rest of under parts pale dull cinnamon-buff or pale isabella color, the under tail-coverts dull bronze-greenish (or grayish dusky glossed with bronze-greenish), broadly-margined with white; femoral tufts and tuft on each side of rump white; bill dull black, the mandible indistinctly more brownish basally; iris dark brown; feet dusky.

*Adult male*.—Length (skins), 115–122 (118); wing, 66.5–70 (68.4); tail, 41–43.5 (42.6); culmen, 20–21 (20.6).<sup>a</sup>

<sup>a</sup> Four specimens.

*Adult female*.—Length (skin), 110; wing, 66.5; tail, 43; culmen, 22.5.<sup>a</sup>

Guatemala (mountains of Vera Paz; Choctúm; Cantoöloc; Telemán), British Honduras (Belize River; Cayo; San Felipe), Honduras (Santa Ana; San Pedro Sula), and eastern Nicaragua (Los Sábalos).

*Trochilus cuvieri* DELATTRE and BOURCIER, Rev. Zool., 1846, 310, part (Telemán, Guatemala).

*Phaeochroa cuvieri* BOUCARD, Gen. Hum. Birds, 1895, 353, part (Guatemala).

*Aphantochroa roberti* SALVIN, Proc. Zool. Soc. Lond., 1861, 203 (tierra caliente of Vera Paz, e. Guatemala; coll. O. Salvin); Ibis, 1861, 354 (Guatemala; crit.).—HEINE, Journ. für Orn., 1863, 178.

*Aphantochroa roberti* Mulsant and Verreaux, Hist. Nat. Ois.-Mouch., i, livr. 2, 1874, 138 (mts. of Vera Paz, Guatemala).

[*Aphantochroa*] *roberti* SIMON, Cat. Troch., 1897, 9.

A[*phantochroa*] *roberti* HARTERT, Das Tierreich, Troch., 1900, 37 (monogr.).

*Campylopterus roberti* GOULD, Mon. Troch., pt. xxiii, Sept., 1861, pl. 53 (vol. ii, 1861, pl. 53).—Mulsant and Verreaux, Classif. Troch., 1866, 22.—ELLIOT, Classif. and Synop. Troch., 1879, 28.—RIDGWAY, Proc. U. S. Nat. Mus., iii, 1880, 310 (Choctúm, Vera Paz, Guatemala).

*Phaeochroa roberti* GOULD, Introd. Troch., oct. ed., 1861, 55.—Mulsant, Ann. Soc. Linn. Lyon, xxii, 1876, 202.—NUTTING, Proc. U. S. Nat. Mus., vi, 1884, 406 (Los Sábalos, Nicaragua).—RIDGWAY, Proc. U. S. Nat. Mus., xiv, 1891, 471 (San Pedro Sula and Santa Ana, Honduras).—SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 300 (San Felipe, Belize R., and Cayo, Brit. Honduras; Choctum and Cantoöloc, Guatemala).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 326.—LANTZ, Trans. Kansas Ac. Sci. for 1896-97 (1899), 221 (Cayo, Brit. Honduras).

[*Phaeochroa*] *roberti* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 80.

[*Polytmus*] *roberti* GRAY, Hand-list, i, 1869, 125, no. 1574.

### Genus PHÆOPTILA Gould.

*Phæoptila b* GOULD, Mon. Troch., v, July, 1861, text to pl. 340; Introd. Troch., oct. ed., 1861, 169. (Type, *Cyanomyia*(?) *sordida* Gould.)

Similar to *Cynanthus* but tail relatively longer, feet relatively stouter, under parts brownish gray in both sexes, and coloration of upper parts very dull.

Bill much longer than head, depressed, broad at base, faintly decurved; culmen broadly rounded but contracted into a narrow ridge basally; tomia smooth; both maxilla and mandible with a narrow lateral median sulcus, that of the former indistinct, however. Nasal operculum broad, tumid, unfeathered, the frontal feathering forming a transverse line across base of forehead. Tarsus slender, with upper portion feathered; anterior toes about equal in length, the hallux slightly shorter, all the toes slender, with claws relatively small. Wing less than three times as long as exposed culmen, the

<sup>a</sup> One specimen.

<sup>b</sup> Φαλος, obscurus et πτελον, pluma. (Gould.)



outermost primary longest. Tail more than half as long as wing, slightly double-rounded, the rectrices broad, rounded at tip.

*Coloration*.—Above, including tail, plain olivaceous glossed with bronze or bronze-green; beneath plain brownish gray; a dusky auricular or suborbital spot; sexes essentially alike, but female with a broad subterminal area of black and terminal area of gray or brown on lateral rectrices.

*Range*.—Mexican plateau. (Monotypic.)

Authorities have disagreed widely as to the relationship of this form, Elliot placing it near *Doleromyia* (= *Leucippus*) (a South American genus) and placing by far the greater number of genera between it and *Cynanthus* ('*Iache*'), while Hartert unites it with the latter. I agree with Hartert in considering it most closely related to the latter, but would separate it generically on account of the differences mentioned in the above diagnosis.

#### PHÆOPTILA SORDIDA (Gould).

##### DUSKY HUMMING BIRD.

*Adult male*.—Above dull metallic bronze-green or greenish bronze, usually much duller (sometimes dull brownish gray or grayish brown) on forehead and crown and on upper tail-coverts; tail dull greenish bronze or grayish brown glossed with greenish bronze, the rectrices dusky basally, this occupying more than basal half of lateral rectrix; remiges purplish dusky, the outermost primary narrowly edged with pale gray or grayish white; a pale gray or grayish white postocular spot, and beneath this a poorly defined dusky area extending to beneath eye; under parts deep sooty gray (nearly mouse gray), deepest on throat, the feathers of which usually have a darker subterminal (concealed) area; femoral tufts and tuft on each side of rump white; shorter under tail-coverts brownish gray, the longer ones mostly buffy; bill brownish (reddish in life), passing into dusky terminally (more or less extensively); iris dark brown; feet dusky; length (skins), 98–106 (101); wing, 56.5–57 (56.8); tail, 35–35.5 (35.3); culmen, 27.5–29 (28.3).<sup>a</sup>

*Adult female*.—Similar to the adult male but four lateral rectrices (on each side) bronzy green (duller and more grayish on lateral rectrix) crossed by a broad subterminal band of dull blue-blackish and tipped with pale brownish gray or grayish brown (most broadly on outermost rectrix); remiges paler and less purplish dusky, and gray of under parts averaging slightly paler than in adult male; length (skins), 101–103 (102); wing, 55; tail, 31.5–32 (31.7); culmen, 29.<sup>b</sup>

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<sup>a</sup> Three specimens.

<sup>b</sup> Two specimens.

*Young male*.—Similar to the adult male but general coloration slightly duller, feathers of upper parts (especially on lower back and rump) tipped or terminally margined with pale brown, rectrices usually tinged terminally with brownish buffy, under parts of body tinged with buffy brownish, and an indistinct malar or rictal stripe of pale brownish.

Western and southern Mexico, in States of Oaxaca (Oaxaca City; Tamazulapám; Huajuapám), Guerrero (Chilpancingo; Omilteme; El Limón; Tlapa; Iguala; Sierra Madre del Sur; Tepetlapa; Vente de Zopilote; Zumbango del Rio), Puebla (Tehuacán; Atlixco), Morelos (Cuernavaca; Yaútepec), Jalisco (Bolaños), and Sonora (Opodepe; La Chumata).

*Cyanomyia* (?) *sordida* GOULD, Ann. and Mag. N. H., iv, 1859, 97 (Oaxaca, Mexico; coll. J. Gould).

*Cyanomyia sordida* SCLATER, Proc. Zool. Soc. Lond., 1859, 386 (Oaxaca).

*Uranomitra sordida* CABANIS and HEINE, Mus. Hein., iii, 1860, 41, footnote (Oaxaca).

*Phæoptila sordida* GOULD, Mon. Troch., pt. xxii, July, 1861, pl. 340 (vol. v, pl. 340); Introd. Troch., oct. ed., 1861, 169.—D'OCA, La Naturaleza, iii, 1875, 210; Troq. de Mex., 1875, 52, pl. (11), fig. 41.—ELLIOT, Classif. and Synop. Troch., 1879, 10.—RIDGWAY, Proc. U. S. Nat. Mus., iii, 1880, 309 (Oaxaca).—SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 63 (Sierra Madre del Sur, Chilpancingo, Tepetlapa, Vente de Zopilote, and Omilteme, Guerrero; Oaxaca).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 260 (Bolaños, Jalisco?; Cuernavaca, Morelos; Atlixco, Puebla; etc.).—HARTERT, Novit. Zool., i, 1894, 61 (Zumbango del Rio and Chilpancingo, Guerrero).—BOUCARD, Gen. Hum. Birds, 1894, 109 (Oaxaca; Puebla).—HARTERT (E. and C.), Novit. Zool., i, 1894, 19 (Zumbango del Rio and Chilpancingo, Guerrero).—THAYER and BANGS, Proc. Biol. Soc. Wash., xix, 1906, 18 (Opodepe and La Chumata, n.-centr. Sonora).

[*Phæoptila sordida* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 93.—SHARPE, Hand-list, ii, 1900, 110.

[*P[haeoptila] sordida* HARTERT, Das Tierreich, Troch., 1900, 64 (monogr.).

*Leucolia sordida* MULSANT and VERREAUX, Classif. Troch., 1865, 35.

[*Hylocharis sordida* GRAY, Hand-list, i, 1869, 152, no. 1957.

*Doleromya sordida* BOUCARD, Notes quelques Troch., 1873, 14 (Oaxaca City; Atlixco, Puebla; habits); Ann. Soc. Linn. Lyon, xx, 1873, 282 (Atlixco).—MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., i, livr. 3, 1874, 207 (Oaxaca; Atlixco; etc.); iv, livr. 3, 1878, 168.

[*Doleromya sordida* MULSANT, Ann. Soc. Linn. Lyon, xxii, 1876, 204.

*Phæoptila zonura* GOULD, Introd. Troch., oct. ed., 1861, 170 (Bolaños, Jalisco; Loddiges coll.).—D'OCA, La Naturaleza, iii, 1875, 304; Los Colibris Mex., 1875, 58 (cites fig. 47).

[*Hylocharis sordida* GRAY, Hand-list, i, 1869, 152, no. 1958.

[*Doleromya sordida*] var. *zonura* MULSANT, Ann. Soc. Linn. Lyon, n. s., xxii, 1876, 204.

#### Genus CYNANTHUS Swainson.

*Cynanthus* SWAINSON, Philos. Mag., n. s., i, June, 1827, 441. (Type *C. latirostris* Swainson; see Stone, Auk, xxiv, 1907, 192; Allen, Bull. Am. Mus. N. H., xxiii, 1907, 347; xxiv, 1908, 34.)

*Circe*<sup>a</sup> (not of Mertens, 1835) GOULD, Monogr. Troch., pt. xiii, May 1, 1857; 1861, 168. (Type, *Cynanthus latirostris* Swainson.)

IACHE ELLIOT, Classif. and Synop. Troch., March, 1879, 234. (Type, *Cynanthus latirostris* Swainson.)

Rather small Trochilidæ (length about 80–90 mm.) with bill decidedly longer than head, very faintly decurved, broader than deep, broad and depressed basally, with the broad nasal operculi unfeathered (except at extreme base) and frontal feathering forming a transverse line; tail distinctly forked (sometimes for more than one-third its length in adult males), the middle rectrices broad and all rounded terminally; adult males metallic green below, sometimes with chin or chin and throat blue, the tail blue-black with deep gray tips to middle rectrices, adult females brownish gray below, with gray tips to lateral rectrices.

Bill decidedly longer than head, broader than deep, broad and depressed basally, very faintly decurved; culmen broadly rounded but contracted to a narrow ridge at base; tomia smooth; maxilla and mandible (especially the latter) each with a distinct narrow median groove. Nasal operculum broad, tumid, completely nude, the frontal feathering forming a transverse line across base of forehead. Tarsus naked except upper portion, slender; anterior toes about equal in length, the hallux slightly shorter; all the toes slender, with claws relatively small. Wing about two and a half to three times as long as bill, with outermost primary longest. Tail nearly to quite half as long as wing, deeply emarginate or forked in adult males, less deeply emarginate in females, the middle rectrices very broad, the lateral ones narrower, all rounded terminally.

*Coloration.*—Above rather dull metallic bronze-green, the forehead more brilliant green or blue; adult males with tail blue-black, the middle rectrices tipped with brownish gray, the under parts metallic green, usually passing into blue on chin or chin and throat; lumbar and femoral tufts white; adult female with middle rectrices metallic greenish, lateral (but not middle) rectrices tipped with gray, and under parts brownish gray.

*Range.*—Mexico and adjacent portions of Arizona and New Mexico. (Three species.)

#### KEY TO THE SPECIES OF CYNANTHUS.

- a. Under parts metallic green (with or without blue on throat); rectrices blue-black, the middle ones tipped with brownish gray. (*Adult males.*)
- b. Tail forked for not more than one-fourth its total length; wing, 49–54.5; exposed culmen, 18.5–22; forehead and crown not brilliant metallic green or blue.
- c. Larger, with longer bill (wing averaging 52.5, culmen 21); back and rump more decidedly green; chin and throat greenish blue or decidedly bluish

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<sup>a</sup> “Ex *Kίρκη*, *Circe*.” (Gould.)



- green; under tail-coverts grayish centrally. (Northern and western Mexico and southern Arizona.).....*Cyananthus latirostris*, adult male (p. 370).
- cc. Smaller, with relatively shorter bill (wing averaging 51.7, culmen 18.2), back and rump bronze; chin and throat emerald green or slightly bluish green; under tail-coverts dusky centrally. (Tres Marias Islands.)  
*Cyananthus lawrencei* (p. 373).
- bb. Tail forked for more than one-third its length; wing, 46-51; exposed culmen, 16.5-19.5; forehead and crown brilliant metallic blue or bluish green. (South-western Mexico.).....*Cyananthus doubledayi* (p. 375).
- aa. Under parts brownish gray; rectrices metallic green basally, blue-black subterminally, the lateral ones tipped with brownish gray. (*Adult females*.)
- b. Wing 49.5-54, averaging much more than 50; culmen 19-23.5, averaging much more than 20; tail slightly emarginate.
- c. Lateral under parts with little of green; basal portion of rectrices brighter green.....*Cyananthus latirostris*, adult female (p. 370).
- cc. Lateral under parts conspicuously spotted or washed with metallic green; basal portion of rectrices darker and duller green.  
*Cyananthus lawrencei*, adult female (p. 374).
- bb. Wing 45-49, averaging 47.2; culmen 18-19.5, averaging 18.5; tail deeply emarginate.....*Cyananthus doubledayi*, adult female (p. 375).

### CYNANTHUS LATIROSTRIS Swainson.

#### BROAD-BILLED HUMMING BIRD.

*Adult male*.—Above metallic bronze-green, usually duller on pileum, where sometimes passing into dull grayish brown on forehead; tail glossy blue-black or dark steel blue, the four middle rectrices tipped (more or less broadly) with deep brownish gray, the remaining rectrices sometimes narrowly margined with the same; remiges dusky brownish gray or dull slate color, faintly glossed with purplish, the outermost primary narrowly edged with pale gray or grayish white; chin and throat bright metallic greenish blue or bluish green (the color more blue anteriorly, more green posteriorly), passing into metallic bronze-green on breast, sides, flanks, and abdomen; under tail-coverts dull white, usually more or less distinctly grayish centrally, the shorter ones sometimes with dusky, slightly metallic, spots; anal tufts and tuft on each side of rump white; bill brownish (purplish red or carmine in life), dusky terminally; iris dark brown; feet dusky; length (skins), 88-105 (92); wing, 49-57 (51.6); tail, 28-36 (32.3), the middle rectrices 23-29.5; culmen, 18.5-22 (20.4).<sup>a</sup>

*Adult female*.—Above similar in color to adult male but duller, especially on pileum, which is usually dull grayish brown or brownish gray anteriorly; remiges paler grayish brown; middle pair of rectrices bronze-green passing into blue-black or greenish black terminally (the extreme tip sometimes green or bronzy); other rectrices with basal half (more or less) bronze-green, the remaining portion blue-black tipped with brownish gray (most broadly on lateral pair); under parts sooty gray or dark drab-gray (brownier than mouse gray),

<sup>a</sup> Thirty-one specimens.

the sides of chest glossed (more or less) with metallic green or bronze-green; under tail-coverts mostly dull white (grayish centrally); anal tufts and tuft on each side of rump white; a white or grayish white postocular spot, and below this a dusky area extending to beneath eye; maxilla dull black, sometimes brownish basally; mandible dusky for terminal half (more or less), brownish (reddish in life) basally; iris and feet as in adult male; length (skins), 85-104 (93); wing, 49.5-54 (51.6); tail, 27.5-33 (30.3); culmen, 19.5-23.5 (21.4).<sup>a</sup>

*Young male*.—Similar to the adult female but feathers of pileum, hindneck, back, scapulars, rump, etc., tipped or terminally margined with pale buffy brown or grayish buff; rectrices as in adult male; chin and throat (in older specimens) intermixed with metallic bluish green or greenish blue feathers, these margined terminally with pale grayish or buffy brown.

*Young female*.—Similar to the adult female but feathers of upper parts margined terminally or tipped with pale buffy brown (sometimes more cinnamonaceous on pileum and rump).

Mexico in general, except extreme southern States of Oaxaca, Tabasco, Chiapas, Campeche, and Yucatan, north to southern Arizona (Santa Rita, Huachuca, Chiricáhua, and Santa Catalina moun-

<sup>a</sup> Nineteen specimens.

| Locality.                                                                      | Wing. | Tail. | Ex-<br>posed<br>culmen. |
|--------------------------------------------------------------------------------|-------|-------|-------------------------|
| MALES.                                                                         |       |       |                         |
| Six adult males from Arizona.....                                              | 51.1  | 31.6  | 21.4                    |
| Seven adult males from Nuevo León, Tamaulipas, and San Luis Potosí.....        | 52.7  | 33.1  | 20.3                    |
| Two adult males from Michoacán.....                                            | 55    | 34.5  | 21.2                    |
| Seven adult males from Sinaloa ( <i>C. latirostris magicus</i> ).....          | 49.9  | 31.1  | 19.3                    |
| Four adult males from Colima ( <i>C. latirostris magicus</i> ).....            | 50.9  | 31.7  | 19.9                    |
| One adult male from Guerrero (El Limón) ( <i>C. latirostris magicus</i> )..... | 50    | 31.5  | 19                      |
| FEMALES.                                                                       |       |       |                         |
| Six adult females from Arizona.....                                            | 50.1  | 28.7  | 21.7                    |
| Two adult females from Nuevo León.....                                         | 52    | 31.5  | 20.5                    |
| One adult female from Hidalgo.....                                             | 54    | 33    | 21                      |
| Five adult females from Jalisco (1) and Michoacán (4).....                     | 52    | 30.5  | 21.3                    |

Three adult males from the extreme southeastern portion of the range of the species (Jaumave, Tamaulipas; Hacienda Angostura, San Luis Potosí, and Valley of Mexico) differ from all others in the collection in the decidedly greenish blue of the throat, which is colored nearly as in the adult male of *C. lawrencei*. Should other specimens from the same geographic area agree with these in this respect, a southeastern form would undoubtedly require recognition. Unfortunately no other specimens are available for examination.

Specimens from the state of Sinaloa average considerably smaller than those from other localities, but those from Colima, Guerrero, and Arizona are nearly as small, and at present, in the light of material examined, I hardly feel justified in accepting a subspecies *C. l. magicus* for the Sinaloa birds. It may be, however, that more satisfactory material will show that two, possibly three, forms can be satisfactorily defined.

tains; Santa Cruz River, west of Patagona Mountains; mountains near Crittenden, Guadalupe Cañon; Tucson; Pinal County), Sonora (District of Montezuma; Nuri; Ysleta; Guaymas; Opodepe; La Chumata), Sinaloa (Mazatlán; Escuinapa; Los Pielos), Jalisco (Barranca Ibarra; Plains of Colima; La Barca; Bolaños; Guadalajara; Atemajac; Santa Ana; Lake Chapala), Colima (Colima), Michoacán (Querendero; Los Reyes; La Salada; Patzcuaro; near Ahuacana), Guerrero (El Limón), Mexico (Valley of Mexico; Hacienda Eslava; Tetelco; Chimalcoyoc), Vera Cruz (alpine region of Orizaba; Jalapa?), Hidalgo (Tula), Guanajuato (Guanajuato), Aguas Calientes (Cavillo), San Luís Potosí (Hacienda Angostura), Tamaulipas (Jaumave; Sierra de Victoria; Santa Leonora; Realito), Nuevo León (Monterey), Territory of Tepic (San Blas).

*Cynanthus latirostris* SWAINSON, Philos. Mag., n. s., i, 1827, 441 ("table lands" of Mexico).—AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Auk, xxv, July, 1908, 375; Check List, 3rd ed., 1910, 206.—VISHER, Auk, xxvii, 1910, 282 (Santa Catalina Mts., Arizona, breeding 3,500 to above 7,000 ft.).

[*Amazilius*] *latirostris* BONAPARTE, Consp. Av., i, 1850, 77; Rev. et Mag. de Zool., 1854, 254.

*Amazilia latirostris* REICHENBACH, Aufz. der Colib., 1854, 10; Troch. Enum., 1855, 8.

*Circus latirostris* GOULD, Mon. Troch., pt. xiii, 1857, (vol. v, 1861, pl. 338); Introd. Troch., oct. ed., 1861, 169.—SCLATER, Proc. Zool. Soc. Lond., 1858, 297 (Oaxaca); 1859, 367 (Jalapa); 1864, 177 (City of Mexico); Cat. Am. Birds, 1862, 317 (Mexico).—HEINE, Journ. für Orn., 1863, 196 (crit.).—DUGÈS, La Natureza, i, 1870, 141 (Guanajuato).—DE OCA, La Natureza, iii, 1875, 65 (Valley of Mexico); Ens. Orn. Troq. Mex., 1875, 28, pl. (5), fig. 18.—HENSCHAW, Rep. Orn. Spec. Wheeler's Survey, 1873 (1874), 162 (Santa Rita Mts., Arizona); Zool. Wheeler's Survey, 1875, 380 (do.).—BOUCARD, Ann. Soc. Linn. Lyon, xx, 1874, 281 (Valley of Mexico).—LAWRENCE, Mem. Bost. Soc. N. H., ii, 1874, 292 (Mazatlán).—SUMICHRAST, La Natureza, v, 1881, 250 (alp. reg. Orizaba).—SANCHEZ, An. Mus. Nac. Mexico, i, 1877, 96, part (Valley of Mexico and Guanajuato).—MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., ii, livr. 1, 1875, 46; iv, livr. 3, 1878, 192.

*Circus latirostris* VILLADA, La Natureza, ii, 1875, 366 (Valley of Mexico).

[*Circus*] *latirostris* MULSANT, Ann. Soc. Linn. Lyon, xxii, 1876, 208.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 93.

*Hylocharis latirostris* MULSANT and VERREAUX, Classif. Troch., 1866, 38.

[*Hylocharis*] *latirostris* GRAY, Hand-list, i, 1869, 151, no. 1955.

*Iache latirostris* ELLIOT, Classif. and Synop. Troch., 1879, 235.—BOUCARD, Notes quelques Troch., 1873, 13 (near City of Mexico); Gen. Hum. Birds, 1894, 110.—ALLEN, Bull. Nutt. Orn. Club, v, 1880, 90; Auk, iii, 1886, 432 (descr. young).—RIDGWAY, Proc. U. S. Nat. Mus., ii, 1881, 15, 188, 319 (Colima; Mazatlán; Arizona); Nom. N. Am. Birds, 1881, no. 348; Rep. U. S. Nat. Mus. for 1890 (1891), 373, pl. 45 (monogr.; habits).—BREWSTER, Bull. Nutt. Orn. Club, vii, 1882, 211 (Santa Rita and Chiricáhua Mts., Arizona; habits).—BELDING, Proc. U. S. Nat. Mus., vi, 1883, 344 (Guaymas, Sonora).—SCOTT, Auk, iii, 1886, 432 (Santa Catalina Mts., Arizona, 3,500–5,000 ft., breeding).—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886, no. 441.—HERRERA, La Natureza, (2), i, 1891, 322 (Valley of Mexico; descr. nest).—SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 60 (Sierra de Victoria, Tamaulipas; Bolaños,



- Lake Chapala, and Santa Ana, Jalisco; San Blas, Tepic; Lake Patzcuaro, Michoacán; etc.).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 256.—JOUY, Proc. U. S. Nat. Mus., xvi, 1893, 784 (Hacienda Angostura, San Luis Potosí; Barranca Ibarra, Jalisco).—BENDIRE, Life Hist. N. Am. Birds, ii, 1895, 228.—BAILEY (Florence M.), Handb. Birds W. U. S., 1902, 244, fig. 322.—SWARTH, Pacific Coast Avifauna, no. 4, 1904, 20 (Huachuca Mts., Arizona).—MILLER, (W. De W.), Bull. Am. Mus. N. H., xxi, 1905, 354 (Eseuinapa, etc., Sinaloa; crit.).
- I[ache] latirostris* COUES, Key N. Am. Birds, 2d ed., 1884, 467.—RIDGWAY, Man. N. Am. Birds, 1887, 319.
- [*Jache*] *latirostris* HEINE and REICHENOW, Nom. Mus. Hein. Orn., 1890, 181 ("Rio Negro").
- P[haeoptila] latirostris* HARTERT, Das Tierreich, Troch., 1900, 63 (monogr.).
- [*Phaeoptila*] *latirostris* SIMON, Cat. Troch., 1897, 15.
- [*Phaeoptila*] *latirostris* SHARPE, Hand-list, ii, 1900, 110.
- Phaeoptila latirostris* THAYER and BANGS, Proc. Biol. Soc. Wash., xix, 1906, 18 (Opodepe and La Chumata, Sonora, breeding).—PHILLIPS, Auk, xxviii, 1911, 77 (Santa Leonora and Realito, Tamaulipas).
- O[rnysmia] lessonii* DELATTRE, Rev. Zool., 1839, 15 ("Jalapa";=female).
- [*Hylocharis*.  $\beta$ . *Cyanophaia*] *lazula* REICHENBACH, Aufz. der Colibr., 1854, 10 ("Chrinatilla," i. e., Chinantla?, Mexico; ex "*Tr.—us* Vieill. 1822").
- [*Hylocharis*] *lazula* REICHENBACH, Troch. Enum., 1855, 8, pl. 770, figs. 4783, 4784.
- [*Sapphironia*] *circe* BONAPARTE, Rev. et Mag. de Zool., 1854, 256.
- [*Hylocharis*] *circe* REICHENBACH, Troch. Enum., 1855, 8, pl. 771, figs. 4786–4788.
- H[ylocharis] doubledayi* (not *Trochilus doubledayi* Bourcier) CABANIS and HEINE, Mus. Hein., iii, 1860, 44, part.
- Hylocharis magica* <sup>a</sup> Mulsant and Verreaux, Classif. Troch., 1866, 38 (nomen nudum!; Mazatlán, Sinaloa, w. Mexico; type now in coll. Am. Mus. Nat. Hist.); Ann. Soc. Linn. Lyon, xviii, 1872, 110.
- Circe magica* Mulsant and Verreaux, Hist. Nat. Ois.-Mouch., ii, livr. 1, 1875, 49 (Mazatlán); Suppl., pl. 12.
- [*Circe*] *magica* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 93.—Mulsant, Ann. Soc. Linn. Lyon, xxii, 1876, 208.
- Iache magica* ELLIOT, Classif. and Synop. Troch., 1879, 235 (Mazatlán; "Lower California;" first description?).—SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 61 (Mazatlán).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 258 (Mazatlán).—BOUCARD, Gen. Hum. Birds, 1894, 110.—MILLER (W. De W.), Bull. Am. Mus. N. H., xxi, 1905, 354, in text (crit.).
- I[ache] magica* RIDGWAY, Man. N. Am. Birds, 1887, 320; Rep. U. S. Nat. Mus. for 1890 (1891), 373 (diagnosis, etc.).

### CYNANTHUS LAWRENCEI (Berlepsch.)

#### LAWRENCE'S HUMMING BIRD.

Similar to *C. latirostris* but smaller, with shorter bill; adult male with chin and throat slightly bluish green (never blue), back and rump more bronzy, and under tail-coverts dusky centrally; adult

<sup>a</sup> The type of *Hylocharis magica* (in the collection of the American Museum of Natural History) is a mounted specimen, and differs very much in coloration from other specimens, the usual bronze-green of the upper parts being replaced by a rather dull purplish or coppery bronze, that of the under parts strongly tinged with the same, and the blue of the throat replaced by bluish green. The plumage has, however, every appearance of having been affected by the action of light or, possibly, immersion in spirits; at any rate, the coloration is certainly abnormal.

female with basal half (more or less) of lateral rectrices brownish gray instead of bronze-green and middle rectrices darker and much duller bronze-green.

*Adult male*.—Pileum and hindneck metallic bronze-green passing into greenish bronze, bronze, or coppery bronze on back, scapulars, wing-coverts, and rump; upper tail-coverts dusky brownish gray (sometimes partly bronzy); tail slightly glossy blue-black, the four middle rectrices tipped with deep brownish gray, the remaining rectrices narrowly edged and terminally margined with the same; remiges dull slate color, faintly glossed with purplish, the outermost primary narrowly edged with pale gray or grayish white; chin and throat bright metallic emerald green (more bluish green, but never blue, anteriorly), passing into metallic bronze-green on rest of under parts; anal tufts and tuft on each side of rump white; under tail-coverts grayish white with a large subterminal spot of slightly glossy bluish dusky or blue-blackish; terminal half (more or less) of maxilla dull black, the basal portion brownish (reddish in life); mandible pale brownish (reddish in life), passing into blackish terminally; iris dark brown; feet dusky; length (skins), 86–94 (91); wing, 51–53.5 (51.7); tail, 31–35.5 (33.1); middle rectrices, 23–25.5 (24.2); culmen, 17.5–19 (18.2).<sup>a</sup>

*Adult female*.—Above metallic bronze-green, duller (sometimes dull brownish gray) on forehead; remiges as in adult male; middle pair of rectrices dusky metallic bronze-green, darker terminally or subterminally; remaining rectrices with basal half (more or less) dull bronze-green, then bluish black, the tip (broadly on outermost) brownish gray—the outermost rectrix with brownish gray (darker basally) replacing bronze-green; under parts sooty gray or deep drab-gray, slightly paler on chin, the sides (including sides of neck) conspicuously glossed or spotted with metallic bronze-green; femoral tufts and tuft on each side of rump white; under tail-coverts brownish gray passing into grayish white on margins, sometimes with a subterminal mesial streak of dusky; a small pale gray or grayish white postocular spot, and beneath this a dusky space extending to beneath eye; bill, etc., as in adult male, but maxilla mostly (sometimes wholly) blackish; length (skins), 87–93 (89); wing, 49.5–50.5 (50); tail, 28–30 (29.4); the middle rectrices, 25.5–27 (26.4); culmen, 19–21 (20.1).<sup>b</sup>

Tres Marias Islands (Maria Madre and Cleofa Islands), western Mexico.

*Circe latirostris* (not *Cynanthus latirostris* Swainson) GRAYSON, Proc. Bost. Soc. N. H., xiv, 1871, 282, part (Tres Marias).—LAWRENCE, Mem. Bost. Soc. N. H., ii, 1874, 292, part (Tres Marias; habits).

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<sup>a</sup> Five specimens.

<sup>b</sup> Four specimens.

- Iache lawrencei* BERLEPSCH, Ibis, 5th ser., v, July, 1887, 292 (Tres Marias Islands, w. Mexico; coll. Count von Berlepsch).—RIDGWAY, Man. N. Am. Birds, 1887, 592; 2d ed., 1896, 613.—BOUCARD, Gen. Hum. Birds, 1894, 112.—NELSON, North American Fauna, no. 14, 1899, 46 (Tres Marias; habits; crit.).—BAILEY (H. II.), Auk, xxiii, 1906, 389 (Cleofa Island, Tres Marias).  
*Iache lawrencii* SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 61.—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 258.  
*I[ache] lawrencei* RIDGWAY, Man. N. Am. Birds, 1887, 320; Rep. U. S. Nat. Mus. for 1890 (1891), 373 (diagnosis, etc.).  
*[Phacoptila] lawrencei* SIMON, Cat. Troch., 1897, 15.  
*P[hacoptila] lawrencei* HARTERT, Das Tierreich, Troch., 1900, 64 (monogr.).  
*[Phacoptila] lawrencei* SHARPE, Hand-list, ii, 1900, 110.

### CYNANTHUS DOUBLEDAYI (Bourcier).

#### DOUBLEDAY'S HUMMING BIRD.

Much smaller than *C. latirostris* or *C. lawrencei* (wing not more than 51 mm.); adult male with pileum much more brilliant metallic green than back, under parts more extensively and decidedly blue, and under tail-coverts black (glossed with blue or green), with or without pale gray or grayish white margins; adult female with basal half of rectrices less distinctly bronze-greenish.

*Adult male*.—Forehead and crown brilliant metallic bluish green, usually decidedly more bluish on forehead, sometimes wholly uniform emerald green;<sup>a</sup> occiput and hindneck metallic grass-green (more bronzy in worn plumage); back, scapulars, wing-coverts, and rump bronze-green, usually duller (sometimes inclining to brownish gray) on rump; upper tail-coverts varying from dull bronze-green to dusky; tail glossy blue-black, the six middle rectrices tipped with deep brownish gray (more broadly on middle pair); remiges purplish dusky; chin and throat bright metallic blue or violet-blue, passing into less bright metallic bluish green on under parts of body, usually more decidedly bluish along median line, the sides of breast more bronzy green; femoral tufts and tuft on each side of rump white; under tail-coverts varying from uniform blue-black to dusky glossed with green or bluish and more or less margined or tipped with pale gray or grayish white; bill brownish (reddish in life) passing into dusky terminally; iris dark brown; feet dusky; length (skins), 75–92 (84); wing, 46–51 (47.8); tail, 28–34 (30.7); middle rectrices 20–23 (21.4); culmen, 16.5–19.5 (17.8).<sup>b</sup>

*Adult female*.—Above metallic bronze-green, usually much duller (often dull grayish brown or brownish gray) on forehead and crown;

<sup>a</sup> This variation in color of the forehead and crown appears to be principally if not wholly due to difference in age of the plumage, all specimens examined in which the plumage is evidently old or considerably affected by wear or exposure having the forehead and crown uniform green, while those in fresh plumage have the forehead distinctly blue and the crown bluish green.

<sup>b</sup> Twelve specimens.



remiges as in adult male; middle rectrices rather dull bronze-green or greenish bronze, usually darker (sometimes blue-blackish) subterminally; other rectrices with basal half (more or less) dull bronze-green (at least on outer web), the remaining portion blue-black tipped with brownish gray or grayish brown, this gray tip disappearing toward inner pair; a small pale gray or grayish white postocular spot or streak, and beneath this a dusky area extending to beneath eye; under parts dull sooty gray or deep drab-gray, sometimes slightly paler on chin and upper throat; femoral tufts and tuft on each side of rump white; under tail-coverts paler brownish gray, usually darker mesially, at least toward base; bill as in adult male but usually more extensively dusky, sometimes mostly so; iris and feet as in adult male; length (skins), 78-87 (82); wing, 45-49 (47.2); tail, 25-28 (26.5); middle rectrices, 22-25 (23.2); culmen, 18-19.5 (18.8).<sup>a</sup>

*Young male*.—Similar to the adult female but tail as in adult male, except that the lateral as well as the middle rectrices are tipped with gray, and throat (in older specimens) intermixed with metallic greenish-blue feathers.

Southwestern Mexico, in States of Guerrero (Dos Arroyos; Acapulco; Tecpán; Egidio Nuevo; Chinantla; Rincón; Vente de Pelegrino; Rio Papagaio) and Oaxaca (Tehuántepec; Chihuitán; Juchitán; Salina Cruz; Puerto Angel).

*Troch[ilus] doubledayi* BOURCIER, Proc. Zool. Soc. Lond., 1847, 46 ("Rio Negro;" coll. G. Loddiges); <sup>b</sup> Rev. Zool., 1847, 259.

<sup>a</sup> Ten specimens.

| Locality.                             | Wing. | Tail. | Ex-<br>posed<br>culmen. |
|---------------------------------------|-------|-------|-------------------------|
| MALES.                                |       |       |                         |
| Six adult males from Oaxaca.....      | 48.5  | 31.9  | 18.7                    |
| Flve adult males from Guerrero.....   | 47.1  | 29.2  | 17                      |
| FEMALES.                              |       |       |                         |
| One adult female from Oaxaca.....     | 47.5  | 26    | 19.5                    |
| Nine adult females from Guerrero..... | 47.2  | 26.5  | 18.8                    |

Besides being smaller than those from localities in the State of Oaxaca (Tehuántepec, Puerto Angel, and Chihuitán) the adult males from the State of Guerrero (Dos Arroyos, Tecpán, and Acapulco) have the rump bronze-green, while the former have the rump grayish olive, with little if any metallic gloss; other color-characters, however, vary so much in both series that I am not able to detect other constant differences. The alleged type of *Trochilus doubledayi* Bourcier, in the collection of the American Museum of Natural History, agrees with the Guerrero series, both in size and coloration; consequently if two forms are to be recognized that from Oaxaca requires a new name, *Iache nitida* Salvin being unquestionably a synonym of *T. doubledayi*.

<sup>b</sup> See Hartert, Novit. Zool., iv, 1897, 530. A cotype (probably) is in the collection of the American Museum of Natural History, New York City.

- H[yl]ocharis doubledayi* GRAY, Gen. Birds, i, Dec., 1848, 114.—CABANIS and HEINE, Mus. Hein., iii, 1860, 144, part ("Rio Negro").
- [*Thaumatias*] *doubledayi* BONAPARTE, Consp. Av., i, 1850, 78.
- [*Hylocharis*.  $\beta$ . *Cyanophaia*] *doubledayi* REICHENBACH, Aufz. der Colibr., 1854, 10.
- [*Sapphironia*] *doubledayi* BONAPARTE, Rev. et Mag. de Zool., 1854, 256.
- Circ[us] doubledayi* GOULD, Mon. Troch., pt. xx, Sept. 1, 1860 (vol. v), pl. 339 (Chinantla, Guerrero); Introd. Troch., oct. ed., 1861, 169.—D'Oca, La Naturaleza, iii, 1875, 302, pl.; Troq. de Mex., 1875, pl. (12), fig. 45.—MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., ii, livr. 1, 1875, 44 (Chinantla).—LAWRENCE, Bull. U. S. Nat. Mus., no. 4, 1876, 33 (Chihuitán, Oaxaca).—SUMCHRAST, La Naturaleza, v, 1881, 250 (Chihuitán and Juchitán, Oaxaca).
- [*Circ[us]*] *doubledayi* MULSANT, Ann. Soc. Linn. Lyon, xxii, 1876, 208.
- [*Circ[us]*] *doubledayi* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 93.
- Iache doubledayi* ELLIOT, Classif. and Synop. Troch., 1879, 235.—SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 62 (Chinantla, Guerrero).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 259 (Venta del Pelegrino, Rincon, Dos Arroyos, and Acapulco, Guerrero; Chihuitán, Juchitán, Salina Cruz, and Tehuán-tepec, Oaxaca).—BOUCARD, Gen. Hum. Birds, 1894, 111 (Chihuitán).—HARTERT, Novit. Zool., iv, 1897, 530 (crit.).
- [*Iache*] *doubledayi* RIDGWAY, Man. N. Am. Birds, 1887, 320; Rep. U. S. Nat. Mus. for 1890 (1891), 373 (diagnosis, etc.).
- [*Phaeoptila*] *doubledayi* HARTERT, Das Tierreich, Troch., 1900, 64 (monogr.).
- [*Phaeoptila*] *doubledayi* SHARPE, Hand-list, ii, 1900, 110.
- [*Phaeoptila*] *doubledayi* SIMON, Cat. Troch., 1897, 15.
- Iache nitida* SALVIN and GODMAN, Ibis, April, 1889, 240 (Acapulco and Rio Papagaio, Guerrero; coll. Salvin and Godman).—SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 62 (Venta del Pelegrino, Rincón, Dos Arroyos, and Acapulco, Guerrero; Salina Cruz and Tehuán-tepec, Oaxaca).—BOUCARD, Gen. Hum. Birds, 1894, 111.
- Jache nitida* HARTERT (E. and C.), Novit. Zool., i, 1894, 61 (Dos Arroyos, near Acapulco, Guerrero).
- [*Phaeoptila*] *nitida* SIMON, Cat. Troch., 1897, 15.
- [*Iache*] *nitida* RIDGWAY, Rep. U. S. Nat. Mus. for 1890 (1891), 373 (diagnosis, etc.)

### Genus BASILINNA Boie.

- Basilinna* BOIE, Isis, 1831, 546. (Type, *Trochilus leucotis* Vieillot.)
- Basilina* (emendation?) REICHENBACH, Av. Syst. Nat., 1849, pl. xxxix.
- Heliopadica* a GOULD, Mon. Troch., pt. xv, May, 1858. (Type, *Trochilus melanotis* Swainson = *T. leucotis* Vieillot.)
- Heliopedica* (emendation) SCLATER and SALVIN, Ibis, April, 1859, 130.

Similar to *Hylocharis*, but wing relatively longer (three times as long as exposed culmen) and style of coloration very different, the side of head with a broad white postocular streak and a black (male) or dusky (female) auricular stripe.

Bill longer than head, broad and depressed basally, faintly decurved; culmen broadly rounded but contracted basally into a narrow meso-rhinal ridge; tomia smooth; mandible with a rather distinct median lateral groove. Nasal operculum broad, very tumid, wholly nude, the frontal feathering forming a transverse line across base of forehead. Tarsus feathered; anterior toes about equal in length, the

hallux slightly shorter. Wing three times as long as exposed culmen, the outermost primary longest. Tail more than half as long as wing, truncated or slightly double-rounded, all the rectrices very broad, rounded at tip.

*Coloration*.—Above metallic bronze-green, including middle rectrices, the other rectrices blackish or chestnut. Adult males with forehead and chin metallic violet-blue or velvety black, a black auricular stripe and white postocular stripe, the throat brilliant metallic green; adult females with the forehead sooty grayish brown, chin and other under parts dull whitish or buffy, the throat sometimes spotted with green; auricular stripe grayish brown or dusky instead of black.

*Range*.—Mexico (including Lower California) to Nicaragua. (Two species.)

KEY TO THE SPECIES AND SUBSPECIES OF BASILINNA.

- a. Lateral rectrices blackish (tipped with grayish in female); center of abdomen white. (*Basilinna leucotis*.)
  - b. Bill larger (exposed culmen 14.5–18.5); green of throat more extended posteriorly, and white of abdomen more restricted. (Southern Mexico to Guatemala.).....*Basilinna leucotis leucotis*, adult male (p. 378).
  - bb. Bill smaller (exposed culmen 14.5–15); green of throat more restricted posteriorly and white of abdomen more extended. (Northern Nicaragua.)  
*Basilinna leucotis pygmæa*, adult male (p. 381).
- aa. Lateral rectrices chestnut or cinnamon-rufous; abdomen light cinnamon-rufous or buffy cinnamon. (Cape San Lucas district, Lower California.)  
*Basilinna xantusi* (p. 382).

BASILINNA LEUCOTIS LEUCOTIS (Vieillot).

WHITE-EARED HUMMING BIRD.

*Adult male*.—Forehead, loreal and malar regions, chin, and upper throat rich metallic violet or violet-blue, passing into velvety black on suborbital and auricular regions, and into duller black, faintly glossed with bluish or greenish, on crown; occiput and hindneck dark metallic bronze or bronze-green; back, scapulars, wing-coverts, and rump varying from bright metallic green to bronze-green or golden green, the upper tail-coverts similar but usually more bronzy (sometimes golden bronze), and, together with feathers of rump, more or less distinctly margined with rusty; middle pair of rectrices bright bronze-green, bronze, or golden bronze, the next pair similar but darker, the remaining rectrices bronzy black, tipped (more or less distinctly) with bright bronze or bronze-green; remiges purplish dusky, the inner secondaries glossed with bronze-green; a broad white postocular stripe, extending backward and downward above and behind upper margin of auricular region to side of neck; middle and lower throat brilliant metallic emerald green (more yellowish green posteriorly) abruptly defined against the dark violet or violet-



blue of upper throat and chin; chest, breast (except medially), sides, and flanks metallic bronze or bronze-green, interrupted by grayish margins to the feathers, the basal grayish also showing where feathers are disarranged; median line of breast and abdomen dull grayish white, sometimes tinged with brownish buffy; femoral tufts dull white; under tail-coverts grayish brown, faintly glossed with bronze, centrally, broadly margined with dull whitish; basal half (more or less) of bill pale brownish (coral red in life), terminal portion dull blackish; iris dark brown; feet dusky; length (skins), 89-102 (92); wing, 52.5-59.5 (55.3); tail, 30.5-35.5 (33); culmen, 14.5-18.5 (16.6).<sup>a</sup>

*Adult female*.—Above similar to the adult male, but pileum dusky brown, the feathers (especially on forehead) sometimes margined with pale rusty brown, and lateral pair of rectrices broadly tipped with brownish gray; a broad black suborbital and auricular patch and white postocular stripe, as in adult male; under parts pale brownish gray or dull grayish white, spotted with metallic bronze-green, this predominating laterally; median line of breast and abdomen plain dull grayish white or pale brownish gray; under tail-coverts grayish centrally (the shorter ones bronzy or bronze-green) broadly margined with dull grayish white; maxilla dull black, mandible pale brownish (reddish in life), with terminal portion dusky; iris and feet as in adult male; length (skins), 78-96 (88); wing, 49-55 (51.9); tail, 30-33.5 (31.3); culmen, 16-18.5 (17.4).<sup>b</sup>

*Young male*.—Pattern of coloration as in adult, but no blue on head, and brilliant emerald-green of throat merely indicated; pileum dull dusky greenish, the feathers margined with dull tawny, this prevailing on occiput; chin and upper throat dull grayish white spotted with dusky; lower throat metallic emerald-green, the feathers distinctly margined with grayish white; prevailing color of rump, superficially, dull tawny, the upper tail-coverts distinctly margined with

<sup>a</sup> Seventeen specimens.

<sup>b</sup> Fifteen specimens.

| Locality.                              | Wing. | Tail. | Ex-<br>posed<br>culmen. |
|----------------------------------------|-------|-------|-------------------------|
| MALES.                                 |       |       |                         |
| One adult male from Arizona.....       | 59.5  | 34.5  | 18.5                    |
| Ten adult males from Mexico.....       | 56.1  | 33.6  | 17.2                    |
| Six adult males from Guatemala.....    | 53.2  | 31.7  | 15.3                    |
| FEMALES.                               |       |       |                         |
| Three adult females from Arizona.....  | 53.8  | 33.2  | 17.7                    |
| Eight adult females from Mexico.....   | 52.1  | 31.1  | 17.7                    |
| Four adult females from Guatemala..... | 50.2  | 30.4  | 16.6                    |

the same; outer pair of rectrices broadly tipped with light brownish gray, the next pair more narrowly tipped with same.

*Young female*.—Similar to the adult female, but general coloration duller; feathers of pileum margined with rusty, and spotting of under parts much duller (less metallic).

Southern Arizona (Huachuca, Chiricáhua, Santa Catalina, and Santa Rita mountains), over nearly the whole of Mexico to highlands of Guatemala (Guatemala City; Chilasco; Amatitlán; Cobán; Totonicapám; near Tecpám; Volcán de Fuego; Volcán de Agua; Santa Rosa above Salamá; Santa Barbara; San Gerónimo; Quezaltenango; Santa Maria near Quezaltenangó; Chuipaché). Sonora (Tetuaca), Sinaloa (Mazatlán), Jalisco (Sierra Nevada de Colima; Sierra de Bolaños; Bolaños; Sierra de Nayarit), Colima (Volcán de Colima; Nevada de Colima), Michoacán (Patzcuaro; Mount Tancitaro), Guerrero (Omiteme; Chilpancingo; Amula), Morelos (Huitzilac; Titela del Volcán), Mexico (Valley of Mexico; Temascaltepec; Tlaxcala; Tenango del Valle; Amecameca; Rio Frio, Ixtacihuatl; Ixtapalapa; Hacienda Eslava; Chimalapa; Tetelco; San Antonio Coapa; Las Cruces), Hidalgo (Reál del Monte). Guanajuato, Zacatecas (Sierra de Valparaiso), Durango (Ciudad Durango), Chihuahua (Tatuaca), Tamaulipas (Sierra de Victoria; Galindo; Realito), Vera Cruz (Jalapa; Mirador; Orizaba; Mount Orizaba, 11,000 ft.; Córdoba; Las Vigas; Cofre de Perote; Maltrata), San Luis Potosí (Sierra de San Luis Potosí), Puebla (Chalchicomula; Tochimilco; Pinál), Oaxaca (Mount Zempoaltepec; 15 miles west of Oaxaca City; Totontepec; Villa Alta; Toniagua), Chiapas (San Cristóbal).

*Trochilus leucotis* VIEILLOT, Nouv. Dict. d'Hist. Nat., ed. 2, xxiii, 1818, 428 ("Brazil"; coll. M. Laugier).

*T[rochilus] leucotis* VIEILLOT, Tabl. Enc. Méth., ii, 1822, 559.

*Hylocharis leucotis* GRAY, Gen. Birds, i, Dec., 1848, 114.—HARTERT, Das Tierreich, Troch., 1900, 66.

*[Hylocharis] leucotis* GRAY, Hand-list, i, 1869, 151, no. 1949.—SHARPE, Hand-list, ii, 1900, 110.

*Hylocharis leucotis* DEARBORN, Pub. 125, Field Mus. N. H., 1907, 98 (Lake Atitlán, 5,000 ft. and above Tecpám, 9,500 ft., Guatemala).—PHILLIPS, Auk, xxviii, 1911, 78 (Galindo and Realito, Tamaulipas).

*[Thaumatias] leucotis* BONAPARTE, Consp. Av., i, 1850, 78.

*Basilinna leucotis* REICHENBACH, Aufz. der Colibr., 1854, 13; Troch. Enum., 1855, 11.—SCLATER, Proc. Zool. Soc. Lond., 1856, 287 (Córdoba, Vera Cruz).—ELLIOT, Classif. and Synop. Troch., 1879, 227.—SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 252, 662.—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 312.—FISHER (A. K.), Auk, xi, 1894, 325 (Chiricáhua Mts., Arizona).—HARTERT (E. and C.), Novit. Zool., i, 1894, 21 (Chilpancingo, Guerrero, 6,000–8,000 ft.; descr. nest).—BOUCARD, Gen. Hum. Birds, 1894, 177.—COX, Auk, xi, 1895, 357 (Mt. Orizaba, 11,000 ft.).—AMERICAN ORNITHOLOGISTS' UNION, Auk, xii, 1895, 164; Check-List, 2d ed., 1895, no. 440.1; 3rd ed., 1910, 206.—BENDIRE, Life Hist. N. Am. Birds, 1895, 227.—BAILEY

- (Florence M.), Handb. Birds W. U. S., 1902, 243.—SWARTH, Condor, vii, 1905, 79 (Santa Rita Mts., Arizona).—VISHNER, Auk, xxvii, 1910, 282 (Santa Rita Mts., Arizona, 1 spec.; Santa Catalina Mts., Arizona, 1 spec., May 4).
- B[asilinna] leucotis* CABANIS and HEINE, Mus. Hein., iii, 1860, 45 (Mexico).—RIDGWAY, Man. N. Am. Birds, 1887, 319; Rep. U. S. Nat. Mus. for 1890 (1891), 369 (diagnosis, etc.).
- Basillina leucotis* SCLATER, Proc. Zool. Soc. Lond., 1856, 287 (Córdova, Vera Cruz).—SWARTH, Pacific Coast Avifauna, no. 4, 1904, 19 (Huachuca Mts., Arizona, 5,500–7,000 ft.).
- Coeligena leucotis* MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., i, livr. 3, 1874, 187 (Temascáltepec, Mexico; Guatemala).
- Heliopædica leucotis* MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., ii, livr. 1, 1875, 3.
- Heliopædica (Coeligena) leucotis* MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., iv, livr. 3, 1878, 186 (synonymy).
- (?) *Trochilus lucidis* SHAW, Gen. Zool., viii, pt. 1, 1812, 327 (based on "*Le plus beau des becfleurs*, Azara Par.")
- (?) *Mellisuga lucida* STEPHENS, Shaw's Gen. Zool., xiv, pt. i, 1826, 247.
- (?) [*Sapphironia*] *lucida* BONAPARTE, Rev. et Mag. de Zool., 1854, 256.
- Sapphironia lucida* SCLATER, Proc. Zool. Soc. Lond., 1858, 297 (Oaxaca); 1859, 386 (Totóntepec, Oaxaca).
- Trochilus melanotis* SWAINSON, Philos. Mag., n. s., i, 1827, 441 (Reál del Monte, Hidalgo).
- Heliopædica melanotis* GOULD, Mon. Troch., ii, pt. xv, 1858, pl. 64; Introd. Troch., oct. ed., 1861, 60.—SALVIN, Ibis, 1860, 195, 263, 270 (Volcan de Fuego, Cobán, and San Gerónimo, Guatemala; habits).—SCLATER, Cat. Am. Birds, 1862, 289 (Mexico); Proc. Zool. Soc. Lond., 1864, 176 (Valley of Mexico).—SANCHEZ, Anal. Mus. Nac. Mex., i, 1877, 96 (Jalapa; Valley of Mexico; Guanajuato).—VILLADA, La Naturaleza, ii, 1874, 365 (Valley of Mexico).—BOUCARD, Ann. Soc. Linn. Lyon, xxii, 1876, 14 (Mexico; Puebla; Oaxaca); Notes Troch. du Mex., 1875, 1 (Mexico; Puebla; Oaxaca; habits, etc.).—D'OCA, La Naturaleza, iii, 1875, 28; Troq. de Mex., 1875, 19, pl. (3), fig. 11.
- [*Heliopædica*] *melanotis* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 81.
- H[eliopædica] melanotis* BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 466.
- Heliopædica melanotis* SCLATER and SALVIN, Ibis, 1859, 130 (Guatemala).—DUGÈS, La Naturaleza, i, 1873, 141 (Guanajuato).
- Hæliopædica melanotis* HERRERA, La Naturaleza, (2), i, 1891, 322 (Valley of Mexico).
- Hylocharis melanotis* MULSANT and VERREAUX, Classif. Troch., 1866, 38.
- Trochilus cuculliger* LICHTENSTEIN, Preis-Verz. Mex. Vög., 1831, 1; Journ. für Orn., 1863, 55.
- Ornismya arsenmii* LESSON, Hist. Nat. Ois.-Mouch., 1829, pp. xxvii, 60, pl. 9 ("Brazil;" coll. Rivoli); Suppl., 1831, 152, pl. 27; Index Gen. and Synop. Troch., 1832, p. xxxix (Reál del Monte; Temascáltepec).
- T[rochilus] xicotencal* DE LA LLAVE, Registro Trimestre, ii, no. 5, Jan., 1833, 48 (Mexico; see Richmond, Auk, xvi, 1899, 324).

**BASILINNA LEUCOTIS PYGMÆA Simon and Hellmayr.**

**LESSER WHITE-EARED HUMMING BIRD.**

Differing from *B. l. leucotis* in smaller size with relatively longer wings; green of throat more restricted posteriorly; breast and abdo-



men with much more white; rectrices blackish blue below, the lateral ones with a grayish white apical spot; wing, 55-57; culmen, 14.5-15.<sup>a</sup> Nicaragua (Matagalpa).

*Basilinna leucotis* (not *Trochilus leucotis* Vieillot) SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 312, part (Matagalpa, Nicaragua).

*Basilinna leucotis pygmaea* SIMON and HELLMAYR, Novit. Zool., xv, June 25, 1908, 12 (Matagalpa, Nicaragua; coll. E. Simon).

### **BASILINNA XANTUSII (Lawrence).**

#### **XANTUS'S HUMMING BIRD.**

Differing from *B. leucotis* in having the tail mostly chestnut and under parts vinaceous-cinnamon; adult male with forehead, chin, etc., black (sometimes faintly glossed with bluish) instead of bright metallic violet or violet-blue.

*Adult male*.—Forehead (sometimes crown also) loreal, suborbital, auricular and malar regions and chin black, the first and last sometimes faintly glossed with blue in certain lights; rest of upper parts metallic bronze-green, the feathers of rump and the upper tail-coverts more or less distinctly margined with rusty; middle pair of rectrices chestnut margined with metallic bronze-green, sometimes mostly of the latter color; rest of tail chestnut, the rectrices sometimes margined terminally with dull bronzy; remiges purplish dusky; a white or buffy white postocular stripe, following upper and posterior margins of black auricular area to side of neck; throat brilliant metallic emerald green, passing into more yellowish green on chest, the feathers more or less distinctly margined (very narrowly) with dull whitish; rest of under parts vinaceous-cinnamon or pale cinnamon-rufous, the breast (especially laterally) and sides spotted with metallic green; femoral tufts white; bill pale brownish (coral red or pinkish red in life), dusky terminally; iris dark brown; feet dusky; length (skins), 86-96 (93); wing, 50-54 (52.3); tail, 30-32.5 (31.1); culmen, 17-19 (17.7).<sup>b</sup>

*Adult female*.—Above similar to the adult male but forehead dull brownish gray, instead of black, and rectrices (except middle pair and outer web of lateral pair) with a more or less extensive blackish subterminal area on each web; auricular area dusky grayish brown instead of black, the whitish postocular stripe more cinnamonaceous or buffy; whole under parts pale vinaceous-cinnamon or cinnamon-buff, except the white femoral tufts; maxilla wholly dusky, the mandible dusky for terminal half (more or less); iris and feet as in adult male; length (skins), 79-90 (84); wing, 43.5-52.5 (48.9); tail, 27-31 (28.7); culmen, 17-19 (17.8).<sup>b</sup>

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<sup>a</sup> Characters taken from original description.

<sup>b</sup> Ten specimens.

*Young male*.—Similar to the adult female but pileum tinged with rusty brown, and throat spotted with metallic emerald green or yellowish green.

*Young female*.—Similar to the young male but without green on throat.

Southern Lower California (Cape San Lucas; San José del Cabo; San José del Rancho; Pearce's Ranch; El Sauz; La Laguna; Comondú; Triunfo; Santa Anita; Sierra de la Laguna; Agua Escondida; Cacachiles Mountains).

*Amazilia xantusi* LAWRENCE, Ann. Lyc. Nat. Hist. N. Y., vii, April, 1860, 109 (Cape St. Lucas; coll. U. S. Nat. Mus.; =adult female).

*Heliopædica xantusi* GOULD, Ibis, 1860, 309; Mon. Troch., pt. xxi, 1861, pl. 2 (vol. ii, 1861, pl. 65); Introd. Troch., oct. ed., 1861, 61.—ELLIOT, Illust. Birds N. Am., i, 1865, pl. 23.—COOPER, Orn. Cal., i, 1870, 365.—BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 467, pl. 47, fig. 3.—D'OCA, La Naturaleza, iii, 1875, 161; Troq. de Mex., 1875, 39.—MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., i, 1877, pl. 16.—MULSANT, Ann. Soc. Linn. Lyon, xxii, 1876, 207.

[*Heliopædica*] *xantusi* COUES, Key N. Am. Birds, 1872, 184.

*Heliopædica xantusi* D'OCA, Troq. de Mex., 1875, pl. 8, fig. 28.

*Heliopædica (Cæligena) xanthusi* MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., iv, livr. 3, 1878, 186.

[*Heliopædica*] *xanthusi* MULSANT, Ann. Soc. Linn. Lyon, n. s., xxii, 1876, 207.

*Coeligena xanthusi* MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., i, livr. 3, 1874, 190, pl. 16 (*Heliopædica xantusi* on plate).

*Heliopædica xanthusi* MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., suppl. plates, pl. 29.

*Basilinna xanthusi* ELLIOT, Classif. and Synop. Troch., 1879, 227.—BOUCARD, Gen. Hum. Birds, 1894, 178.

*Basilinna xantusi* RIDGWAY, Proc. U. S. Nat. Mus., iii, Aug. 24, 1880, 6, 188, 219, 229, 319; v, 1883, 542 (descr. nest and eggs); Nom. N. Am. Birds, 1881, no. 347; Rep. U. S. Nat. Mus. for 1890 (1891), 369, pl. 44 (monographic).—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886, no. 440.—BELDING, Proc. U. S. Nat. Mus., v, 1882, 542 (w. base Cacachiles Mts. and San José del Cabo, Lower California; descr. nest, etc.); vi, 1883, 349 (high mts. of s. Lower California).—BRYANT (W. E.), Proc. Calif. Ac. Sci., ser. 2, 1889, 289 (Comondú, Lower California and n. to lat. 29°).—SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 255 (Agua Escondida, 20 m. s. of La Paz, Triunfo, and San José del Cabo).—BENDIRE, Life Hist. N. Am. Birds, ii, 1895, 226.—BREWSTER, Bull. Mus. Comp. Zool., xli, 1902, 113 (Cape San Lucas district; descr.; descr. nest and eggs, habits, etc.).

[*Basilinna*] *xantusi* HEINE, Journ. für Orn., 1863, 196.—COUES, Key N. Am. Birds, 2d ed., 1884, 460.—RIDGWAY, Man. N. Am. Birds, 1887, 318.

*Hylocharis xantusi* MULSANT and VERREAUX, Classif. Troch., 1866, 38.

[*Hylocharis*] *xantusi* HARTERT, Das Tierreich, Troch., 1900, 66 (monogr.).

[*Hylocharis*] *xantusi* GRAY, Hand-list, i, 1869, 151, no. 1950.

[*Hylocharis*] *xantusi* SHARPE, Hand-list, ii, 1900, 110.

[*Heliopædica*] *xanthusi* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 81.

*Heliopædica castaneocauda* LAWRENCE, Ann. Lyc. Nat. Hist. N. Y., vii, April, 1860 (pub. 1862), 145 (Cape San Lucas, Lower California; coll. U. S. Nat. Mus.; =adult male).—ELLIOT, Illust. Birds N. Am., i, 1869, pl. 22.

## Genus HYLOCHARIS Boie.

*Hylocharis* BOIE, Isis, 1831, 546. (Type, *Trochilus sapphirinus* Gmelin.)

*Sapphironia* BONAPARTE, Rev. et Mag. de Zool., vi (2), May, 1854, 256. (Type, as fixed by Gray, 1855, *Trochilus sapphirinus* Gmelin.)

Rather small Trochilidæ (length about 80–100 mm.) with bill longer than head, broad and depressed basally, the broad nasal operculi very tumid and completely naked, frontal feathering forming a transverse line across base of forehead, tail slightly rounded or double-rounded, no black or white markings on head,<sup>a</sup> and tail uniform bright metallic golden, bronze, coppery, or blue-black.

Bill decidedly longer than head, depressed, broad basally, very slightly decurved; culmen broadly rounded, but contracted into a narrow ridge basally; tomia smooth; a more or less distinct narrow median groove along sides of mandible, and more or less distinct indication of a similar groove on maxilla. Nasal operculum broad, tumid, completely nude, the frontal feathering forming a transverse line across base of forehead or (in *H. grayi*) forming two very slight antiæ. Tarsus feathered for upper portion, at least in front; middle and inner toes about equal in length, the outer slightly shorter; hallux shorter than outer toe. Wing nearly three times as long as exposed culmen, the outermost primary longest. Tail more than half as long as wing, slightly rounded or double-rounded, the rectrices broad, with rounded tip.

*Coloration*.—Above metallic green or bronze-green (sometimes with head or at least forehead blue or violet), the tail very bright metallic golden, golden-green, bronze, or dark chestnut with middle rectrices and upper coverts copper bronze, or else uniform blue-black; adult males with under parts of body metallic green or bronze, the throat bronze, green, blue, or violet, the chin sometimes rufous. Sexes different (except in *H. grayi*), the female with under parts mostly dull whitish medially.

*Range*.—Guatemala to Guiana, Paraguay, northern Argentina, Bolivia, and eastern Peru. (About ten species and subspecies, but only one in Middle America.)

## HYLOCHARIS ELICIE (Bourcier and Mulsant).

## ELICIA'S GOLDEN-TAIL.

*Adult male*.—Pileum, hindneck, back, scapulars, and wing-coverts metallic green (varying from nearly pure green to more or less golden green), passing, through a more golden or bronzy hue on rump, into bright golden or coppery bronze on upper tail-coverts; tail brilliant golden bronze, more or less tinged with golden green in certain lights,

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<sup>a</sup> The females of some species have the chin and throat intermixed with white.



rarely<sup>a</sup> varying to bright golden green; remiges dark brownish slate or dusky, faintly glossed with violaceous; chin and extreme upper throat dull whitish, the feathers (except, sometimes, on apex of chin) with a terminal spot of metallic violet-blue; rest of throat, together with upper chest, bright metallic violet-blue; breast, sides, and flanks metallic bronze-green (the upper breast or lower chest usually purer or more bluish green); abdomen and median portion of breast buffy grayish or pale broccoli brown, slightly more buffy on lower abdomen; femoral tufts white; under tail-coverts grayish brown, broadly edged and tipped with cinnamon; bill pale brownish (pinkish or reddish in life), more or less extensively dusky terminally; iris dark brown; feet grayish brown or dusky; length (skins), 78–90 (88); wing, 47.5–52 (49.6); tail, 24.5–29 (26.6); culmen, 17–18.5 (17.6).<sup>b</sup>

*Adult female*.—Essentially like the adult male, but under parts paler, usually with the violet-blue of throat much more restricted and broken by dull whitish margins to feathers; length (skins), 74–83 (77); wing, 44.5–48.5 (46.8); tail, 24–26 (25); culmen, 17–19 (17.9).<sup>c</sup>

Extreme southern Mexico in State of Chiapas (Ocuilapa) and southward through Guatemala (Cobán; Choctúm; Masagua; Retalhuleu; Gualán), Salvador (La Libertad), Honduras (Santa Ana; Rio Segovia), Nicaragua (Sucuyá; La Libertad and Santo Domingo, Chontales), and Costa Rica (Miravalles; Coralillo; La Vijagua; El General; Bolsón; Lagarto; Tenorio; Boruca; Pozo del Rio Grande; Pozo Azul de Pirris; Rio Turubales; Pigres; Bagaces; San Pedro del Mojón), to western Panamá (Boquete; Volcán de Chiriquí; Divala; Bugaba; Chitra; David).

*Trochilus eliciae* BOURCIER and Mulsant, Ann. Sci. Phys. et Nat. Lyon, ix, 1846, 314 (locality unknown); Rev. Zool., 1846, 316.

*Polytmus eliciae* GRAY, Gen. Birds, i, Dec., 1848, 109.

*Polytmus eliciae* GRAY, Hand-list, i, 1869, 133, no. 1706.

*Chrysuronia eliciae* BONAPARTE, Cons. Av., i, 1850, 75.—REICHENBACH, Aufz. der Colibr., 1854, 9; Troch. Enum., 1855, 5, pl. 722, figs. 4644, 4645.

*Chrysuronia elicia* BONAPARTE, Rev. et Mag. de Zool., 1854, 254.

<sup>a</sup> In only one among eleven specimens examined.

<sup>b</sup> Twenty specimens.

| Locality.                                  | Wing. | Tail. | Culmen. |
|--------------------------------------------|-------|-------|---------|
| MALES.                                     |       |       |         |
| Five adult males from Guatemala.....       | 49.7  | 27.1  | 18.1    |
| Two adult males from Honduras.....         | 48.5  | 25.2  | 18      |
| Ten adult males from Costa Rica.....       | 49.8  | 26.8  | 17.3    |
| Three adult males from western Panamá..... | 49.3  | 26.3  | 17.3    |

<sup>c</sup> Ten specimens, from Costa Rica.

- Chrysuronia eliciae* GOULD, Mon. Troch., pt. xvi, 1858 (vol. v), pl. 328; Introd. Troch., oct. ed., 1861, 165.—SCLATER and SALVIN, Ibis, 1859, 130 (Guatemala).—SCLATER, Cat. Am. Birds, 1862, 316 (Cobán, Guatemala).—LAWRENCE, Ann. Lyc. N. Y., vii, 1862, 465 (Isthmus of Panamá); ix, 1868, 128 (Costa Rica).—FRANTZIUS, Journ. für Orn., 1869, 317 (Costa Rica).—SALVIN, Proc. Zool. Soc. Lond., 1870, 211 (Bugaba and Chitra, Panamá); Ibis, 1872, 320 (Chontales, Nicaragua); Cat. Birds Brit. Mus., xvi, 1892, 251, 662 (Cobán, Choctúm, and Masagua, Guatemala; La Libertád, Salvador; La Libertád and Santo Domingo, Chontales, Nicaragua; Costa Rica; Volcán de Chiriquí, Bugaba, Chitra, and David, Panamá).—MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., ii, livr. i, 1876, 4, 13 (Guatemala, etc.); iv, livr. 3, 1878, 186.—MULSANT, Ann. Soc. Linn. Lyon, xxii, 1876, 207.—BOUCARD, Liste Ois. récol. Guat., 1878, 47; The Hum. Bird, ii, 1892, 83 (Verágua); Gen. Hum. Birds, 1894, 140 (Guatemala; Nicaragua; Verágua).—ZELEDÓN, Cat. Aves de Costa Rica, 1882, 21.—ELLIOT, Classif. and Synop. Troch., 1879, 169.—RIDGWAY, Proc. U. S. Nat. Mus., vi, 1883, 386 (Sucuyá, Nicaragua; crit.); x, 1887, 591 (Rio Segóvia, Honduras); Condor, vii, 1905, 154, in text (Pigres, Costa Rica).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 311 (La Libertád and Santo Domingo, Nicaragua; etc.).—CHERRIE, Expl. Zool. Mérid. Costa Rica, 1893, 44 (Lagarto and Boruca, s. w. Costa Rica).
- [*Chrysuronia*] *eliciae* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 93.
- [*Chrysurisca*] *eliciae* CABANIS and HEINE, Mus. Hein., iii, 1860, 42 (Honduras).
- [*Chrysurisca*] *eliciae* HEINE and REICHENOW, Nom. Mus. Hein. Orn., 1890, 180 (Guatemala; Honduras).
- Hylocharis eliciae* MULSANT and VERREAUX, Classif. Troch., 1866, 38.—BANGS, Auk, xviii, 1901, 359 (Divala, Panamá); xxiv, 1907, 295 (Boruca and Pozo del Rio Grande, Costa Rica); Proc. New Engl. Zool. Club, iii, 1902, 29 (Boquete, Panamá, 3,000 ft.).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 530 (Pacific slope, Costa Rica, 1,000–2,000 ft.).
- [*Hylocharis*] *eliciae* SIMON, Cat. Troch., 1897, 15.—SHARPE, Hand-list, ii, 1900, 111.
- H[hylocharis] eliciae* HARTERT, Das Tierreich, Troch., 1900, 68.

#### Genus CHALYBURA Reichenbach.

- [*Agyrtria*.] *δ. Chalybura* REICHENBACH, Aufz. der Colib., March (?), 1854, 10. (Type, *Trochilus buffoni* Lesson.)
- Hypuroptila* GOULD, Mon. Troch., pt. vii (vol. ii), May, 1854, pl. 89. (Type, *Trochilus buffoni* Lesson.)
- [*Hylocharis*.] *δ. Cyanochloris* REICHENBACH, Aufz. der Colib., 1854, 10. (Type, *Trochilus (Glaucis?) caeruleogaster* Gould.)
- Methon* MULSANT, Ann. Soc. Linn. Lyon, n. s., xxii, 1876, 203 (Cat. Ois. Mouch., 1875, 7). (Type, *Chalybura caeruleiventris* Reichenbach = *Trochilus (Glaucis?) caeruleogaster* Gould.)

Rather large Trochilidæ (length about 105–115 mm.), with peculiarly modified or specialized under tail-coverts (these downy, semi-decomposed, plume-like), stout, straight, or slightly decurved bill much longer than head, the tail long (about two-thirds as long as wing), emarginate, with broad rectrices, and coloration rather plain.

Bill much longer than head, stout, straight, or faintly decurved, nearly terete but slightly depressed, especially at base; culmen rounded except for basal portion, where compressed into a narrow

ridge; terminal portion of both maxillary and mandibular tomia minutely serrate; mandible with a longitudinal median groove, the maxilla with more or less faint indication of a similar groove. Nasal operculum moderately broad and convex, mostly nude, the frontal feathering reaching to or beyond its middle portion, forming a short antia or angle on each side of mesorhinium. Tarsus stout, naked; middle and inner toes about equal in length, the outer slightly shorter, the hallux shorter than outer toe; toes rather stout, with claws relatively short but very acute. Wing about three times as long as exposed culmen, the outermost primary longest. Tail about two-thirds as long as wing, emarginate, the rectrices broad, with rounded or broadly subcuneate tip.

*Coloration*.—Above metallic green, in some species changing into dark bronze or copper-bronze on upper tail-coverts. Adult males with under parts (except under tail-coverts) metallic green or blue, the under tail-coverts white, or (in one species) dusky, the tail plain blue-black, bronzy black, or bronzy; adult females with under parts grayish medially, greenish laterally, the lateral rectrices tipped with gray.

*Range*.—Nicaragua to Venezuela and Ecuador. (Six species.)

#### KEY TO THE SPECIES OF CHALYBURA.

- a. Under parts (except under tail-coverts) metallic green or blue. (*Adult males*.)
  - b. Under tail-coverts white.
    - c. Mandible wholly black.
      - d. Under parts metallic green. (Panamá to Colombia and Venezuela.)  
*Chalybura buffonii*, adult male (p. 388).
      - dd. Under parts metallic blue. (Colombia.)  
*Chalybura cæruleogaster*, adult male (extralimital).<sup>a</sup>
    - cc. Mandible pale colored (reddish or flesh colored in life) for at least basal half.
      - d. Under parts green, without blue tinge. (Panamá and northwestern Colombia.).....*Chalybura urochrysa*, adult male (p. 390).
      - dd. Under parts tinged with blue.
        - e. Throat and chest bluish green, abdomen green. (Panamá.)  
*Chalybura isauræ*, adult male (p. 391).

<sup>a</sup> *Trochilus (Glaucis?) cæruleogaster* Gould, Proc. Zool. Soc. Lond., 1847, 96 (locality unknown).—[*Lampornis*] *cæruleigaster* Bonaparte, Consp. Av., i, 1850, 72.—*Hypuroptila cæruleogaster* Gould, Mon. Troch., pt. vii, May, 1854 (vol. ii), pl. 91.—*Chalybura cæruleogaster* Gould, Introd. Troch., oct. ed., 1861, 72.—*C[halybura] cæruleogaster* Hartert, Das Tierreich, Troch., ii, 1900, 92.—[*Hylocharis*.  $\delta$ . *Chalybura*] *cæruleiventris* Reichenbach, Aufz. der Colibr., 1854, 10.—[*Agyrtria*.  $\delta$ . *Chalybura*] *cæruleiventris* Reichenbach, Troch. Enum., 1855, 7, pl. 767, figs. 4775, 4776.—*C[halybura] cæruleiventris* Cabanis and Heine, Mus. Hein., iii, 1860, 20.—*Lampornis cæruleiventris* Mulsant and Verreaux, Hist. Nat. Ois.-Mouch., i, livr. 3, 1874, 168 (Andes of Colombia).—*Chalybura (Lampornis) cæruleiventris* Mulsant and Verreaux, Hist. Nat. Ois.-Mouch., iv, livr. 2, 1877, 156.—*Chalybura cæruleiventris* Elliot, Classif. and Synop. Troch., 1879, 47.—*Hypuroptila cæruleiventris* Salvin, Cat. Birds Brit. Mus., xvi, 1892, 88.



ee. Throat golden green, abdomen greenish blue. (Western Ecuador.)

*Chalybura intermedia*, adult male (extralimital).<sup>a</sup>

bb. Under tail-coverts dusky. (Eastern Nicaragua to western Panamá.)

*Chalybura melanorrhoa*, adult male (p. 392).

aa. Under parts mostly pale grayish. (*Adult females*.<sup>b</sup>)

b. Under tail-coverts white.

c. Lateral under parts with little green admixture; lateral rectrices more broadly tipped with pale gray or grayish white.

*Chalybura buffonii*, adult female (p. 381).

cc. Lateral under parts extensively spotted or overlaid by green; lateral rectrices more narrowly tipped with pale gray or grayish white.

*Chalybura cæruleogaster*, adult female (extralimital).

bb. Under tail-coverts gray..... *Chalybura melanorrhoa*, adult female (p. 392).

### CHALYBURA BUFFONII (Lesson).

#### BUFFON'S PLUMELETEER.

*Adult male*.—Above deep metallic grass green, slightly duller on pileum, the upper tail-coverts more bronzy, the middle rectrices metallic bronze or greenish bronze, sometimes blackish, more or less glossed with bronzy; rectrices (except middle pair) blue-black, usually edged more or less broadly with bronzy, at least toward base, the outer web of pair next to middle sometimes almost wholly bronzy; remiges dull brownish slate or dusky, faintly glossed with purplish, the inner secondaries mostly metallic grass green; under parts metallic dark emerald green or clear metallic grass green, the feathers grayish basally and crossed by a subterminal bar (concealed) of white or grayish white, and narrowly margined with pale grayish, forming a squamated appearance when viewed from behind; femoral tufts, anal region, and under tail-coverts pure white; bill dull black; iris dark brown; feet brownish (in dried skins); length (skins), 110–129 (119); wing, 67.5–73 (69.9); tail, 39.5–48.5 (43.3); culmen, 23–27 (24.6).<sup>c</sup>

*Adult female*.—Above similar to adult male, but lateral rectrices rather broadly tipped with pale gray; under parts, including malar and suborbital regions, pale gray, usually glossed or spotted, more or less, with metallic green laterally, sometimes over whole surface;

<sup>a</sup> *Chalybura intermedia* Hartert (E. and C.), Novit. Zool., i, Jan., 1894, 44 (road from Guayaquil to Loja, bet. Poggio and Santa Rosa, w. Ecuador; coll. Tring Mus.).—*C[halybura] intermedia* Hartert (E.), Das Tierreich, Troch., 1900, 92.—*Hypuroptila intermedia* Boucard, The Hum. Bird, v, 1895, 325 (synonymy; descr.).

<sup>b</sup> Females of *C. urochrysa* and *C. isauræ* not seen by me.

<sup>c</sup> Fifteen specimens.

femoral tufts, anal region, and under tail-coverts pure white, as in adult male; length (skins), 100–112 (105); wing, 59.5–65 (62); tail, 36.5–39 (37.5); culmen, 23.5–27 (24.6).<sup>a</sup>

*Immature male*.—Similar to the adult male but bright green of under parts less continuous or appearing in patches on a dull grayish green ground color (representing the earlier plumage).

Eastern Panamá (Lion Hill, Paraiso, and Obispo Stations; Chepo; Panamá; Punta de Sabana), Colombia (Bogotá; lower Magdalena; Rio Dagua; Naranjo; Valencia; Santa Elena and Remédios, Antioquia; Santa Marta, Doña Amo, Manuare, Bonda, Minca, Don Diego, and Cacagualito, Santa Marta) and Venezuela (La Guaira; Maracay, Aragua; Valência; Puerto Cabello; Guanta; San Julian; Carácas).

*Trochilus buffonii* LESSON, Hist. Nat. Troch., 1831, 31, pl. 5 ("Brasil"); Index Gen. et Synop. Troch., 1832, p. xii ("Brasil").

*P[olytmus] buffonii* GRAY, Gen. Birds, i, Dec., 1848, 108.

[*Polytmus*] *buffonii* GRAY, Hand-list, i, 1869, 126, no. 1584.

[*Lampornis*] *buffoni* BONAPARTE, Consp. Av., i, 1850, 72; Rev. et Mag. de Zool., 1854, 250.

*Lampornis buffoni* MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., i, livr. 3, 1874, 170 (San Antonio, near Bogotá, Colombia, 6,000–7,000 ft.; La Guaira, Venezuela).

<sup>a</sup> Nine specimens.

| Locality.                              | Wing. | Tail. | Culmen. |
|----------------------------------------|-------|-------|---------|
| MALES.                                 |       |       |         |
| Two adult (?) males from Panamá.....   | 69.2  | 42    | 24      |
| Ten adult males from Colombia.....     | 69.9  | 43    | 24.3    |
| Three adult males from Venezuela.....  | 70.2  | 45    | 25.7    |
| FEMALES.                               |       |       |         |
| One adult female from Panamá.....      | 60.5  | 38    | 23.5    |
| Seven adult females from Colombia..... | 62.4  | 37.5  | 24.3    |
| One adult female from Venezuela.....   | 61    | 37    | 27      |

I am by no means satisfied that all the above-mentioned specimens represent a single form. Six males (three fully adult, three evidently immature) from the Santa Marta district of Colombia have the middle rectrices wholly metallic bronze or greenish bronze and the remaining rectrices (except the outermost) broadly edged with the same, at least basally. On the other hand, fully adult as well as immature males from the lower Magdalena and Bogotá districts and those from Venezuela have the middle rectrices either very dull bronzy or blackish faintly glossed basally with bronzy, while two from Panamá (the only ones seen from that district) have the middle pair of rectrices wholly blue-black like the rest of the tail, and the upper tail-coverts purplish bronze. The series examined is, however, much too small to enable one to decide the question properly.

*Hypuroptila buffoni* GOULD, Mon. Troch., pt. vii, 1854 (vol. ii), pl. 89.—LAWRENCE, Ann. Lyc. N. Y., vii, 1862, 319 (Lion Hill, Panamá).—SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 87 (Lion Hill, Paraiso, and Chepo, Panamá; Minca, Sierra de Santa Marta, Manuare, and Bogotá, Colombia; Venezuela).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 274 (Obispo, Panamá; etc.).—BOUCARD, The Hum. Bird, 1895, 7 (Rio Dagua, n. w. Colombia); Gen. Hum. Birds, 1895, 322 (Colombia).—ROBINSON, Proc. U. S. Nat. Mus., xviii, 1896, 682 (Guanta, Venezuela).—BANGS, Proc. Biol. Soc. Wash., xii, 1898, 135 (Santa Marta, Colombia).—SALVADORI and FESTA, Boll. Mus. Zool., etc., Torino, xiv, 1899, no. 339, 7 (Punta de Sabana, Panamá).—ALLEN, Bull. Am. Mus. N. H., xiii, 1900, 141 (Bonda, Minca, etc., Santa Marta, Colombia).—ROBINSON and RICHMOND, Proc. U. S. Nat. Mus., xxiv, 1901, 172 (La Guaira and San Julian, Venezuela).

[*Agrytria*] ♂. *Chalybura buffonii* REICHENBACH, Aufz. der Colibr., 1854, 10.

[*Agrytria*] *buffonii* REICHENBACH, Troch. Enum., 1855, 7, pl. 766, figs. 4773, 4774.

C[*halybura*] *buffoni* CABANIS and HEINE, Mus. Hein., iii, 1860, 20 (Caracas, Venezuela; Veragua).

*Chalybura buffoni* GOULD, Introd. Troch., oct. ed., 1861, 72.—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1864, 365 (Lion Hill, Panamá); 1868, 628 (Venezuela); 1879, 529 (Remédios and Santa Elena, Antioquia, Colombia).—SALVIN and GODMAN, Ibis, 1879, 205 (Manuare, Santa Marta, Colombia, 2,700 ft.); 1880, 171 (Minca, Santa Marta, 2,000 ft.).—ELLIOT, Classif. and Synop. Troch., 1879, 45.—BERLEPSCH, Journ. für Orn., 1884, 309 (Bucaramanga, Colombia; crit.); 1887, 316 (Bogotá).—SIMON, Mém. Soc. Zool. France, ii, 1889, 219 (San Esteban, Venezuela).—BOUCARD, The Hum. Bird, ii, 1892, 84 (Bogotá).—SIMON and DALMAS, Ornith., xi, 1901, 222 (Naranjo, w. Colombia).

[*Chalybura*] *buffoni* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 82.—MULSANT, Ann. Soc. Linn. Lyon, xxii, 1876, 203.—SHARPE, Hand-list, ii, 1900, 117.

C[*halybura*] *buffoni* HARTERT, Das Tierreich, Troch., 1900, 91.

*Chalybura buffonii* SCLATER, Cat. Am. Birds, 1862, 292.—PELZELN, Orn. Bras., iv. Abth., 1870, 408.

*Chalybura (Lampornis) buffoni* MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., iv, livr. 2, 1879, 156.

*Chalybura xeneicauda* LAWRENCE, Proc. Ac. Nat. Sci. Phila., 1865, 38 (Venezuela; coll. Am. Mus. N. H.).—BOUCARD, The Hum. Bird, ii, 1892, 84 (Valencia, Colombia).

[*Polytmus*] *xeneicaudus* GRAY, Hand-list, i, 1869, 126, no. 1588.

*Hypuroptila xeneicauda* BOUCARD, Gen. Hum. Birds, 1895, 323 (Puerto Cabello, Venezuela; Valencia, Colombia).

### CHALYBURA UROCHRYSA (Gould.)

#### GOLDEN-TAILED PLUMELETEER.

"Adult male.—Upper surface dark grass-green; rump and upper tail-coverts bronzy; tail rich golden bronze; under surface emerald-green, almost the same shade as in *H. buffoni*; abdomen dull grey washed with green; maxilla black, mandible flesh-color, tip black. Total length about 5 inches [127 mm.], wing 2.75 [69.8 mm.], tail, central rectrices 1.6 [40.6], lateral 1.8 [45.7]; bill 1.15 [29.2].

"Female unknown." <sup>a</sup>

<sup>a</sup> Salvin, Cat. Birds Brit. Mus., xvi, 1892, 89.



Panamá and northwestern Colombia (Medellín and Remédios, Antioquia).

*Hypuroptila urochrysa* GOULD, Proc. Zool. Soc. Lond., xxix, 1861, 198 (Panamá; coll. J. Gould); Ann. and Mag. N. H., 3d ser., viii, 1861, 268.

*Hypuroptila urochrysia* GOULD, Mon. Troch., pt. xxii (vol. ii), 1861, pl. 90.—SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 89 (Panamá, Medellín, and Remédios, Colombia).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 275.—BOUCARD, Gen. Hum. Birds, 1895, 325 (Panamá; Veragua).

*Chalybura urochrysea* GOULD, Introd. Troch., oct. ed., 1861, 72.—ELLIOT, Classif. and Synop. Troch., 1879, 46.—BOUCARD, The Hum. Bird, ii, 1892, 85 (Panamá).—HARTERT, Novit. Zool., v, 1898, 494 (Cachaví, n. w. Ecuador).

[*Chalybura*] *urochrysia* Mulsant, Ann. Soc. Linn. Lyon, n. s., xxii, 1876, 203.

*Lampornis urochrysia* Mulsant and Verreaux, Classif. Troch., 1866, 24; Hist. Nat. Ois.-Mouch., i, livr. 3, 1874, 176 (Panamá; Veragua).

[*Polytmus*] *urochryseus* GRAY, Hand-list, i, 1869, 126, no. 1587.

[*Chalybura*] *urochrysea* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 82.—SHARPE, Hand-list, ii, 1900, 117.

[*Chalybura*] *urochrysea* HARTERT, Das Tierreich, Troch., 1900, 92 (monogr.).

### CHALYBURA ISAURÆ (Gould.)

#### BARONESS DE LAFRESNAYE'S PLUMELETEER.

*Adult male*.—Pileum and (usually) hindneck metallic greenish brown, usually tinged or intermixed with coppery bronze, the feathers with a small central area of dusky, producing a more or less distinct squamate effect; back, scapulars, and wing-coverts metallic bronze-green, usually more or less tinged or intermixed with bronze or coppery; rump coppery bronze, passing into darker and more purplish bronze on upper tail-coverts; tail uniform dark purplish bronze (less violaceous than upper tail-coverts); remiges dusky, faintly glossed with violaceous; malar region, chin, throat, chest, and breast rather dark metallic green (bluish grass green to viridian), the feathers abruptly dusky gray beneath the surface; femoral tufts and under tail-coverts dull white; rest of under parts dusky grayish, strongly glossed or overlaid by bronze-green or bronze; maxilla dull black, mandible pale dull yellowish (pink or reddish in life?); iris dark brown; legs and feet pale brownish (pink or reddish in life?); length (skins), 105; wing,<sup>a</sup> 64.5–68.5 (66.6); tail, 39–43.5 (41.4); culmen, 22.5–25.5 (24.1)<sup>b</sup>.

*Adult female*.—"Under surface from the chin to the vent grey, the under tail-coverts white; the two lateral rectrices on either side are tipped with dull grey preceded by a dark subterminal band."<sup>c</sup>

Panama (Boca del Toro; Santa Fé and Santiago, Veragua) and Caribbean coast district of Costa Rica (Talamanca; Puerto Limón).

*Hypuroptila isauræ* GOULD, Proc. Zool. Soc. Lond., xxix, 1861, 199 (Boca del Toro, "Costa Rica," i. e., Panamá; coll. J. Gould).—SALVIN, Cat. Birds Brit.

<sup>a</sup> One specimen.

<sup>c</sup> Salvin, Cat. Birds Brit. Mus., xvi, 1892, 90.

<sup>b</sup> Four specimens.

Mus., xvi, 1892, 89 (Boca del Toro; Santa Fe and Santiago de Veragua).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 275.—BOUCARD, Gen. Hum. Birds, 1895, 324.

[*Hypuroptila*] *isauræ* Mulsant, Ann. Soc. Linn. Lyon, xxii, 1876, 203.

*Hypuroptila* (*Lampornis*) *isauræ* Mulsant and Verreaux, Hist. Nat. Ois.-Mouch., iv, livr. 2, 1877, 158 (synon.)

*Chalybura?* *isauræ* Gould, Introd. Troch., oct. ed., 1861, 72.

*Chalybura isauræ* Salvin, Proc. Zool. Soc. Lond., 1867, 152 (Santiago and Santa Fé de Veragua, Panamá; descr. female).—Lawrence, Ann. Lyc. N. Y., ix, 1868, 122 (Boca del Toro).—FRANTZIUS, Journ. für Orn., 1869, 315 (Costa Rica).—ELLIOT, Classif. and Synop. Troch., 1879, 46.—ZELEDÓN, Cat. Aves de Costa Rica, 1882, 20; Anal. Mus. Nac. Costa Rica, i, 1887, 122.—BOUCARD, The Hum. Bird, ii, 1892, 85 (Veragua).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 537 (Costa Rica).

[*Chalybura*] *isauræ* Sclater and Salvin, Nom. Av. Neotr., 1873, 82.—Sharpe, Hand-list, ii, 1900, 117.

[*Chalybura*] *isauræ* Hartert, Das Tierreich, Troch., 1900, 92 (monogr.).

[*Polytmus*] *isauræ* Gray, Hand-list, i, 1869, 126, nò. 1586.

*Lampornis isauræ* Mulsant and Verreaux, Hist. Nat. Ois.-Mouch., i, livr. 3, 1874, 174 (Boca del Toro, Santa Fe, and Santiago, Panamá).

### CHALYBURA MELANORRHOA Salvin.

#### DUSKY PLUMELETER.

*Adult male*.—Above dark metallic grass-green, passing into bronze on rump and into bronze-green or greenish bronze on wing-coverts; upper tail-coverts dusky bronzy purplish; tail purplish bronze; remiges dusky purplish brown, the inner secondaries bronze-green or greenish bronze; primary coverts darker, indistinctly tipped with dull bronze-green; under parts deep metallic grass-green, passing into dusky bronze on abdomen and flanks; under tail-coverts dull black or dusky, glossed with bronzy purple; anal tufts dull grayish; maxilla black, mandible pale brownish (flesh color in life) dusky terminally; iris dark brown; feet pale brownish (purplish red or lake red in life); length (skins), 111–119 (115); wing, 68.5–72.5 (70.2); tail, 44–48 (46.2); culmen, 22.5–24 (23.3).<sup>a</sup>

*Adult female*.—Similar to the adult male in color of upper parts, but under parts dull brownish gray, with sides (especially sides of breast) mostly metallic green, the chest sometimes spotted with the same; lateral rectrices broadly tipped with brownish gray; bill, etc., as in adult male; length (skins), 102–108 (105); wing, 61–65.5 (63.2); tail, 36.5–41 (38.5); culmen, 22–24.5 (23.3).<sup>a</sup>

Caribbean slope of Nicaragua (Chontales; Los Sábalos) and Costa Rica (Angostura; Tucurríqui; Turrialba; Juan Viñas; Jiménez; Bonilla; El Hogar; Río Sicsola; Cuábre; Guápiles; La Junta; La Vijagua; Pacuare; Talamanca) to western Panamá (Veragua).

*Chalybura melanorrhoa* Salvin, Proc. Zool. Soc. Lond., 1864 (pub. April 1, 1865), 585 (Tucurríqui, Costa Rica; coll. Salvin and Godman); Ibis, 1872, 313, 319

<sup>a</sup> Ten specimens.

(Chontales, Nicaragua; crit.).—LAWRENCE, Ann. Lyc. N. Y., ix, 1868, 122 (Angostura and Pacuare, Costa Rica).—FRANTZIUS, Journ. für Orn., 1869, 315 (Costa Rica).—ELLIOT, Classif. and Synop. Troch., 1879, 47.—MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., Suppl., pl. 9.—ZELEDÓN, Cat. Aves de Costa Rica, 1882, 20; Anal. Mus. Nac. Costa Rica, i, 1887, 121 (Jiménez, Costa Rica).—NUTTING, Proc. U. S. Nat. Mus., vi, 1883, 406 (Los Sábalo, Nicaragua).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, pl. 55, figs. 2, 3.—CARRIKER, Ann. Carnegie Mus., vi, 1910, 536 (Caribbean lowlands, Costa Rica; habits).

*Chalybura melanorhoa* BOUCARD, The Hum. Bird, ii, 1892, 84 (Veragua).

[*Chalybura*] *melanorrhoea* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 82.—MULSANT, Ann. Soc. Linn. Lyon, xxii, 1876, 203.—SHARPE, Hand-list, ii, 1900, 117.

[*Chalybura*] *melanorrhoea* HARTERT, Das Tierreich, Troch., 1900, 93 (monogr.).

[*Polytmus*] *melanorrhous* GRAY, Hand-list, i, 1869, 126, no. 1585.

*Lampornis melanorrhoea* MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., i, livr. 3, 1874, 174, pl. 14 (Veragua; Angostura and Pacuare, Costa Rica).

*Hypuroptila (Lampornis) melanorrhoea* MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., iv, livr. 2, 1877, 157.

*Hypuroptila melanorrhoea* GOULD, Suppl. Troch., 1881, pl. 10.—SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 90 (Chontales, Nicaragua; Tucurríqui and Turrialba, Costa Rica).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 276.—BOUCARD, Gen. Hum. Birds, 1895, 324 (Costa Rica; Veragua).

*Chalybura carnioli* LAWRENCE, Proc. Ac. Nat. Sci. Phila., 1865, 39 (Angostura, Costa Rica; coll. U. S. Nat. Mus.).

#### Genus EUPHERUSA Gould.

*Eupherusa* <sup>a</sup> GOULD, Mon. Troch., pt. xiv, Sept., 1857, pl. 324. (Type, *Ornismya eximia* Delattre.)

Rather small Trochilidæ (length about 90–95 mm.) with bill about as long as head, maxillary tomium serrate terminally, nasal operculum mostly nude, tail more than half as long as wing, rounded, with broad rectrices, secondaries rufous, and lateral rectrices mostly white (at least the inner web), the adult males bright metallic green below, with under tail-coverts white, the females pale gray or grayish white below.

Bill about as long as head, straight, nearly terete; culmen rounded but basally contracted into a distinct narrow ridge; terminal portion of maxillary tomium minutely serrate; mandible and maxilla without distinct lateral median sulci. Nasal operculum narrow, mostly nude, the frontal feathering extending to or beyond its middle portion, and forming a slightly emarginate median antia. Tarsus feathered; middle and inner toes about equal in length, the outer slightly shorter, the hallux shorter than outer toe. Wing a little more than three times as long as exposed culmen, the outermost primary longest. Tail more than half as long as wing, truncated or slightly rounded, the rectrices broad, with rounded tip.

*Coloration*.—Above metallic bronze-green, the middle rectrices dark bronze-green or blackish; secondaries cinnamon-rufous, usually

<sup>a</sup> Εὔ, benè, feliciter, et φέρουσα, gestans. (Gould.)



tipped with green or dusky; lateral rectrices extensively white, at least on inner web. Adult males with under parts bright metallic green, the under tail-coverts white; females with under parts pale gray or grayish white, glossed with green on sides.

*Range*.—Southern Mexico to western Panamá. (Three species.)

#### KEY TO THE SPECIES OF EUPHERUSA.

- a. Under parts (except under tail-coverts) metallic green. (*Adult males*.)
  - b. Only two pairs of lateral rectrices with white on inner webs, the outer webs black or partly black.
  - c. Outermost rectrices with outer web wholly black. (*Eupherusa eximia*.)
  - d. Smaller (wing averaging 58.7, tail 33.5, culmen 17.6); line of demarcation between black and white on inner web of lateral rectrices sharply defined, nearly transverse. (Guatemala to Nicaragua.)

**Eupherusa eximia eximia**, adult male (p. 394).

- dd. Larger (wing averaging 60.7, tail 34.7, culmen 18.7); line of demarcation between black and white on inner web of lateral rectrices indistinct, oblique. (Southeastern Mexico.)

**Eupherusa eximia nelsoni**, adult male (p. 396).

- cc. Outermost rectrices with outer web white next to shaft, the edge black. (Costa Rica and western Panamá.)

**Eupherusa egregia**, adult male (p. 396).

- bb. Four pairs of rectrices with white on inner web, the outer web and tip of inner web gray. (Southwestern Mexico.)

**Eupherusa poliocerca**, adult male (p. 397).

- aa. Under parts dull white or pale gray. (*Adult females*.)
  - b. Lateral pair of rectrices with a broad blackish tip, extending entirely across both webs and including shaft.

**Eupherusa eximia eximia**, adult female (p. 395).<sup>a</sup>

- bb. Lateral pair of rectrices white, including tip, narrowly edged, in part, with dusky, the shaft entirely white.
- c. Middle rectrices bronzy passing into dusky terminally; outermost rectrix white, the outer web edged terminally with dusky; second rectrix broadly margined for terminal half with black.

**Eupherusa egregia**, adult female (p. 397).

- cc. Middle rectrices bronze-green narrowly margined with dusky; outermost rectrix white, the outer web narrowly edged subterminally with dusky, the second similar, but with dusky subterminal spot on edge of inner web.

**Eupherusa poliocerca**, adult female (p. 398.)

#### EUPHERUSA EXIMIA EXIMIA (Delattre).

##### STRIPE-TAILED HUMMING BIRD.

*Adult male*.—Above bright metallic grass green, usually becoming more bronzy posteriorly, the upper tail-coverts sometimes distinctly bronze; middle rectrices dark bronze-green or greenish bronze; two lateral rectrices (on each side) with outer web black, faintly glossed with bronzy, inner web pure white very broadly and abruptly tipped with black; remaining rectrices with outer web dark bronze or bronze-green, inner web black; primaries purplish dusky, the innermost with

<sup>a</sup> The female of *E. e. nelsoni* not seen.

basal portion cinnamon-rufous; secondaries cinnamon-rufous tipped with dusky (with bronze-green on innermost); under parts bright metallic grass green (more yellowish green in position *a*), the feathers deep gray basally, this separated from the metallic green tip by a narrow bar of grayish white; femoral tufts grayish white; under tail-coverts pure white; bill dull black, the mandible sometimes slightly brownish basally; iris dark brown; feet light brownish (reddish in life?); length (skins), 84–93 (89); wing, 56.5–61 (58.7); tail, 32.5–34.5 (33.5); culmen, 16–19 (17.6).<sup>a</sup>

*Adult female*.—Above similar to the adult male but secondaries scarcely if at all tipped with dusky, middle rectrices black or dusky terminally, and two lateral rectrices (on each side) partly white (next to shaft); under parts (except femoral tufts and under tail-coverts) light brownish gray, the sides spotted or glossed with metallic green; bill, etc., as in adult male; length (skins), 80–90 (85); wing, 50.5–54.5 (53.1); tail, 27–31 (29.9); culmen, 16–19.5 (17.6).<sup>b</sup>

*Immature male*.—Similar to the adult male but bright green of under parts more restricted, the abdomen and flanks mostly grayish brown.

Guatemala (Cobán; Choctúm; Kamkhál; track between Cajabón and San Luís; Guatemala City); Nicaragua (Matagalpa; San Rafael del Norte).<sup>c</sup>

*Ornismya eximia* DELATTRE, Echo du Monde Savant, 1843, 1069, (Cobán, Guatemala).

[*Chlorestes*. *γ*. *Saucerottia*] *eximia* REICHENBACH, Aufz. der Colib., 1854, 8.

[*Saucerottia*] *eximia* BONAPARTE, Rev. et Mag. de Zool., 1854, 255.

[*Amazilia*] *eximia* REICHENBACH, Troch. Enum., 1855, 8, pl. 776, fig. 4802.

*Eupherusa eximia* GOULD, Mon. Troch., v, pt. xiv, 1857, pl. 324; Introd. Troch., oct. ed., 1861, 163.—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1859, 130 (Guatemala).—SALVIN, Ibis, 1860, 195, 271 (Cobán); Cat. Birds Brit. Mus., xvi, 1892, 72, part (Choctúm, Kamkhál, and Cobán, Guatemala), 656 (Matagalpa, Nicaragua).—SCLATER, Cat. Am. Birds, 1862, 316.—MULSANT and VERREAUX, Classif. Troch., 1866, 32; Hist. Nat. Ois.-Mouch., i, livr. 4, 1874, 272, part (Vera Paz, Guatemala); ii, livr. 1, 1875, pl. 20; iv, livr. 3, 1878, 179.—BOUCARD, Ann. Soc. Linn. Lyon, xx, 1874, 280; Liste Ois. réc. Guat., 1878, 46; Gen. Hum. Birds, 1894, 169 (Guatemala).—ELLIOT, Classif. and Synop. Troch., 1879, 212.—SALVIN and GODMAN, Ibis, 1892, 327 (Matagalpa, Nicaragua); Biol. Centr.-Am., Aves, ii, 1892, 271 (Cobán, Kamkhál, Choctúm, and bet. Cajabón and San Luís, Guatemala; Matagalpa, Nicaragua).

[*Eupherusa*] *eximia* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 92 (Guatemala).—SHARPE, Hand-list, ii, 1900, 116 (Guatemala).

<sup>a</sup> Eleven specimens (ten from Guatemala, one from Nicaragua).

<sup>b</sup> Eight specimens, from Guatemala.

The single specimen from Nicaragua (San Rafael del Norte) does not differ, either in coloration or dimensions, from Guatemalan examples, though the length of the culmen is half a millimeter shorter than the minimum of the same measurement in the latter series.

<sup>c</sup> There are apparently no records of this species for Salvador nor Honduras.

[*Euphrerusa*] *eximia* MULSANT, Ann. Soc. Linn. Lyon, xxii, 1876, 205.

*E[upherusa]* *eximia* HARTERT, Das Tierreich, Troch., 1900, 89, part.

*E[upherusa]* *e[eximia]* *eximia* RIDGWAY, Proc. Biol. Soc. Wash., xxiii, April 19, 1910, 54, in text.

[*Polytmus*] *eximius* GRAY, Hand-list, i, 1869, 133, no. 1700.

### EUPHERUSA EXIMIA NELSONI Ridgway.

#### NELSON'S HUMMING BIRD.

Similar to *E. e. eximia*, but larger, especially the bill; adult male with green of under parts more yellowish green, and black tip to inner web of two lateral rectrices (on each side) with line of demarcation against white of basal portion decidedly oblique and much less sharply defined.

*Adult male*.—Length (skins), 93–103 (98); wing, 60.5–61 (60.7); tail, 34–35.5 (34.7); culmen, 18.5–19 (18.7).<sup>a</sup>

Southeastern Mexico, in States of Vera Cruz (Motzorongo) Oaxaca (Chimalapa and Sierra de Santo Domingo, Tehuántepec), and Puebla (Chinantla).

*Eupherusa eximia* (not *Ornismya eximia* Delattre) BOUCARD, Ann. Soc. Linn.

Lyon, xx, 1874, 280; Notes quelques Troch., 1873, 12 (Chinantla, Puebla).—

SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 72, part (Chimalapa and Sierra

Santo Domingo, Oaxaca).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii,

1892, 271, part (Chinantla, Puebla; Chimalapa and Sierra Santo Domingo, Oaxaca).

*E[upherusa]* *eximia* HARTERT, Das Tierreich, Troch., 1900, 89, part.

*Eupherusa eximia nelsoni* RIDGWAY, Proc. Biol. Soc. Wash., xxiii, April 19, 1910, 54 (Motzorongo, Vera Cruz, e. Mexico; coll. U. S. Nat. Mus.).

### EUPHERUSA EGREGIA Sclater and Salvin.

#### EGREGIOUS HUMMING BIRD.

Similar to *E. eximia*, but larger; adult male with outer webs of two outer rectrices (on each side) white (except terminally), edged with dusky; adult female with outermost rectrix wholly white, or with merely a dusky edging for terminal portion of outer web.

*Adult male*.—Above bright metallic bronze-green or greenish bronze; middle pair of rectrices dark dull bronzy, sometimes more dusky terminally, the next two pairs similar but with inner web dull black or dusky, the two outer pairs white broadly tipped and (except inner web) edged with bronzy black or dusky; primaries purplish dusky, the innermost ones becoming cinnamon-rufous basally; secondaries cinnamon-rufous tipped with dusky (the innermost with metallic bronze-green); under parts bright metallic grass green or yellowish green, the feathers deep gray basally, with a sub-terminal bar of pale gray or grayish white; femoral tufts dull white or grayish white; under tail-coverts pure white; bill dull black, the mandible sometimes brownish basally; iris dark brown; feet light

<sup>a</sup> Two specimens.



grayish brown (in dried skins); length (skins), 88–100 (96); wing, 58–62 (60.1); tail, 33–37 (34.9); culmen, 17–19.5 (18.6).<sup>a</sup>

*Adult female*.—Above similar to the adult male, but outermost rectrix white without blackish tip, the outer web merely edged with dusky terminally; secondaries less extensively cinnamomeous; under parts pale brownish gray, glossed or spotted with metallic bronze-green laterally, the under tail-coverts, etc., as in adult male; length (skins), 87–95 (91); wing, 53.5–56 (54.9); tail, 30–34 (31.9); culmen, 17.5–20 (18.9).<sup>a</sup>

*Young male*.—Similar to the adult male but bright green of under parts more restricted, first appearing in spots on throat and chest, the general surface being grayish glossed with bronze-green, fading into whitish posteriorly.

Costa Rica (Cervantes; Cervantes de Cartago; Azahár de Cartago; Barranca; Navarro; Volcán de Irazú; Coliblanco; Juan Viñas; Tenório; Cerro de Santa María; Las Cruces de Candelária; Volcán de Barba; San Cristóbal; Ojuros de Térraba) and western Panamá (Volcán de Chiriquí; Boquete; Castillo; Calovévora).

*Eupherusa egregia* SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1868, 389 (Castillo and Calovévora, Panamá; coll. Salvin and Godman).—SALVIN, Ibis, 1869, 316 (crit.); Proc. Zool. Soc. Lond., 1870, 210 (Verágua; crit.); Cat. Birds Brit. Mus., xvi, 1892, 73 (Costa Rica; Volcán de Chiriquí, Castillo; Calovévora).—MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., i, livr. 4, 1874, 274; iv, livr. 3, 1878, 179.—BOUCARD, Notes quelques Troch., 1873, 13 (Verágua); Proc. Zool. Soc. Lond., 1878, 71 (Navarro, Costa Rica); The Hum. Bird, ii, 1892, 81 (Verágua); Gen. Hum. Birds, 1895, 170 (Verágua; Costa Rica).—ELLIOT, Classif. and Synop. Troch., 1879, 213.—ZELEDÓN, Cat. Aves de Costa Rica, 1882, 21; Anal. Mus. Nac. Costa Rica, i, 1887, 122 (Cervantes de Cartago, Costa Rica).—SHARPE, Suppl. Gould's Mon. Troch., 1885 (text).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 272.—BANGS, Proc. New Engl. Zool. Club, iii, 1902, 29 (Boquete and Volcán de Chiriquí, Panamá, 6,000–7,000 ft.).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 534 (Costa Rica).—FERRY, Pub. 146, Field Mus. N. H., orn. ser., i, no. 6, 1910, 263 (Coliblanco, Costa Rica).

[*Eupherusa*] *egregia* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 92.—SHARPE, Hand-list, ii, 1900, 116.

*E*[*upherusa*] *egregia* HARTERT, Das Tierreich, Troch., 1900, 89.

[*Polytmus*] *egregius* GRAY, Hand-list, i, 1869, 133, no. 1701.

[*Euphrerusa*] *egregia* MULSANT, Ann. Soc. Linn. Lyon, xxii, 1876, 205.

*Eupherusa eximia* (not *Ornismya eximia* Delattre) LAWRENCE, Ann. Lyc. N. Y., ix, 1868, 127 (Cervantes and Barranca, Costa Rica; crit.), 146 (crit.).—FRANTZIUS, Journ. für. Orn., 1869, 317 (Costa Rica).

## EUPHERUSA POLIOCERCA Elliot.

### WHITE-TAILED HUMMING BIRD.

Differing conspicuously from its congeners in having the inner webs of four (instead of only two) pairs of rectrices white, their outer web and tip of inner web gray instead of blackish.

<sup>a</sup> Eighteen specimens.

*Adult male*.—Above bright metallic bronze-green, including middle pair of rectrices; secondaries and four innermost primaries hazel-rufous, the inner secondaries with a metallic green spot at tip of outer web and the rufous of primaries passing into purplish brown terminally; longer primaries uniform dusky, faintly glossed with purplish; lateral rectrix with inner web grayish white (purer white basally), crossed near tip by a bar of grayish dusky, the outer web hoary gray, darker along edge and at tip; second, third, and fourth rectrices (counting from each side) similar, but second with the white tip occupying both webs, and third and fourth dusky at tip (without any white terminal spot); under parts bright metallic yellowish green, the anal region and under tail-coverts pure white; bill black; iris dark brown; feet dusky brown (in dried skin); length (mounted specimen), 94; wing, 70; tail, 38.1; culmen, 18.3.<sup>a</sup>

*Adult female*.—Above bright metallic golden green, the four middle rectrices paler, more silvery green; the pair next to middle tipped with white; two outer pairs of rectrices white, the outermost slightly edged with dusky on subterminal portion of outer web, the next similarly but more extensively edged with dusky and with a dusky grayish spot on subterminal portion of inner web, next to edge; third rectrix with greater part of outer web light bronze-green, broadly tipped with white and grayish basally, the inner web more grayish bronzy green subterminally, white terminally, and pale gray or grayish white basally; secondaries and innermost primaries dull cinnamon-rufous, the latter passing into dusky purplish bronze terminally, the longer primaries uniform purplish dusky; under parts grayish white, the sides of breast spotted with metallic green; femoral tufts and under tail-coverts white or grayish white; bill, etc., as in adult male; length (skin), 96; wing, 54.5; tail, 34.<sup>b</sup>

Southwestern Mexico, in States of Oaxaca (Putla) and Guerrero (Omiteme; Chilpancingo); Puebla (Chinantla)?

*Eupherusa poliocerca* ELLIOT, Ann. and Mag. N. H., 4th ser., viii, Oct., 1871, 266 (Putla, Oaxaca; coll. D. G. Elliot); Classif. and Synop. Troch., 1879, 212.—BOUCARD, Notes quelques Troch., 1873, 13 (Putla); Gen. Hum. Birds, 1895, 170 (Putla; Chinantla, Puebla).—D'OCA, La Natureza, iii, 1875, 302, fig. 44; Troq. de Mex., 1875, 55, pl. (12), fig. 44.—MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., i, livr. 4, 1874, 271, pl. 24.—GOULD, Suppl. Troch., 1881, pl. 55.—SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 74 (Putla; Omiteme, Guerrero, 8,000 ft.).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 272.—HARTERT (E. and C.), Novit. Zool., i, 1894, 19, 61 (Chilpancingo, Guerrero, 5,000–7,000 ft.; descr. adult female).

<sup>a</sup> Described from a specimen from Chilpancingo, Guerrero, collected by O. T. Baron, and examined through courtesy of Mr. Frank Ward.

<sup>b</sup> Description and measurements from no. 186475, coll. U. S. Nat. Mus. (Biological Survey coll.), from Omiteme, Guerrero, May 23, 1903, Nelson and Goldman. The tip of maxilla is broken off.

[*Eupherusa poliocerca* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 92.—SHARPE, Hand-list, ii, 1900, 116.

*Eupherusa poliocerca* HARTERT, Das Tierreich, Troch., 1900, 89 (monogr.).

[*Euphrerusa poliocerca* Mulsant, Ann. Soc. Linn. Lyon, xxii, 1876, 205.

#### Genus CALLIPHARUS Elliot.

*Clotho* (not of Faujas, 1808, nor Walckenaer, 1809, nor Gray, 1840) Mulsant, Ann. Soc. Linn. Lyon, n. s., xxii, 1876, 205 (Cat. Ois.-Mouch., 1875, 9). (Type, *Eupherusa nigriventris* Lawrence.)

*Callipharus* ELLIOT, Classif. and Synop. Troch., 1879, 211. (Type, *Eupherusa nigriventris* Lawrence.)

Small Trochilidae (length about 75–78 mm.) related to *Eupherusa*, but tail more strongly rounded, the adult male with head and under parts velvety black.

Bill about as long as head, straight, terete, but rather broad and depressed basally; culmen rounded but basally (between nasal operculi) contracted into a distinct ridge; terminal portion of maxillary tomium minutely serrate; mandible with a distinct lateral median groove or sulcus. Nasal operculum very broad and tumid, mostly unfeathered, only the upper-posterior portion covered by frontal feathering, which, anteriorly, forms a convex line across base of forehead. Tarsus densely clothed with short feathers; middle toe apparently very slightly longer than both lateral toes, the hallux shorter than the latter. Wing three times as long as culmen, or a little more, the outermost primary longest. Tail more than half as long as wing, rounded, the rectrices moderately broad, rather soft.

*Coloration*.—Hindneck, back, scapulars, wing-coverts, and rump metallic bronze-green or greenish bronze; secondaries cinnamon-rufous or chestnut, tipped with dusky (as in *Eupherusa*); lateral rectrices white. Adult male with head and under parts (except under tail-coverts) uniform velvety black, the under tail-coverts white; adult female with under parts pale gray, the pileum dusky, faintly glossed with greenish.

*Range*.—Costa Rica and western Panamá. (Monotypic.)

Although referred to *Elvira* by Dr. Hartert, the single species constituting the genus *Callipharus* differs in the presence of minute serrations to the terminal portion of the maxillary tomium, rufous secondaries, and rounded tail, in all of which characters it agrees with *Eupherusa* and not with *Elvira*. Were it not for the strikingly different and quite unique coloration of the adult male, involving structural differences in the feathers of the pileum and under parts (which are beautifully blended and velvety instead of harsh and conspicuously imbricated and squamate), and the decidedly more rounded tail, it might well be merged with *Eupherusa*. Considering all its peculiarities, I feel sure that *Callipharus* should stand alone in any arrangement of the family which does not involve a very great reduction in the number of genera.



**CALLIPHARUS NIGRIVENTRIS (Lawrence).****BLACK-BELLIED HUMMING BIRD.**

*Adult male*.—Forehead, crown, and under parts velvety black, the under tail-coverts white; occiput, hindneck, back, scapulars, and wing-coverts metallic bronze-green, the upper tail-coverts duller and more bronzy; four middle rectrices dusky bronze or dull blackish glossed with bronze; three lateral rectrices (on each side) white, sometimes margined terminally with dusky; secondaries cinnamon-rufous tipped with brownish dusky (the innermost with metallic bronze-green); primaries dusky purplish bronze, the innermost becoming cinnamon-rufous basally; primary coverts dusky; bill black, the mandible more or less brownish (pale dull flesh color in life) basally; iris dark brown; feet dusky (in life white, with scutella pale brownish); length (skins), 72–87 (79); wing, 46–50.5 (48.3); tail, 26.5–30 (27.9); culmen, 13.5–15 (14.5).<sup>a</sup>

*Adult female*.—Above metallic bronze-green; four middle rectrices dull greenish bronze or dull blackish, becoming bronzy basally; two outer rectrices (on each side) white, the third mostly white, but with more or less of dusky on edges, especially terminally; remiges dusky, faintly tinged with purplish bronze, the secondaries and inner primaries passing into cinnamon-rufous basally; under parts dull grayish white or pale brownish gray, the sides and flanks mostly metallic bronze-green; bill, etc., as in adult male, but feet paler; length (skins), 73–87 (79); wing, 44–47 (45.8); tail, 25.5–29 (27.1); culmen, 14.5–16 (14.9).<sup>b</sup>

*Immature male*.—Similar to the adult male, but forehead and crown dull metallic bronze-green (instead of velvety black), and black of under parts duller and more restricted, the under parts of body (except medially) mostly dull dusky bronze-greenish.

Costa Rica (Peorsnada; Naranjo de Cartago; Cervantes; La Hondura; Coliblanco; Cariblanco de Sarapiquí) and western Panamá (Verágua; Lomo Lleno; Cordillera del Chucu; Calobre; Caribbean slope Volcán de Chiriquí, 6,000–7,000 ft.).

<sup>a</sup> Thirteen specimens.<sup>b</sup> Eight specimens.

| Locality.                                            | Wing. | Tail. | Culmen. |
|------------------------------------------------------|-------|-------|---------|
| MALES.                                               |       |       |         |
| Ten adult males from Costa Rica.....                 | 48.2  | 28.1  | 14.5    |
| Three adult males from western Panamá (Verágua)..... | 48.5  | 27    | 14.3    |
| FEMALES.                                             |       |       |         |
| Six adult females from Costa Rica.....               | 46    | 27.6  | 15      |
| Two adult females from western Panamá (Verágua)..... | 45.2  | 25.7  | 14.7    |

*Eupherusa nigriventris* LAWRENCE, Proc. Ac. Nat. Sci. Phila., 1867, 232 (Costa Rica; coll. U. S. Nat. Mus.); Ann. Lyc. N. Y., ix, 1868, 127 (Costa Rica).—FRANTZIUS, Journ. für Orn., 1869, 317 (Costa Rica).—SALVIN, Proc. Zool. Soc. Lond., 1870, 210 (Cordillera del Chucu, Verágua; descr. female).—MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., i, livr. 4, 1874, 270, pl. 23 (Costa Rica); iv, livr. 3, 1878, 179 (Cordillera del Chucu; descr. female).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, pl. 57, figs. 3, 4.

[*Eupherusa*] *nigriventris* MULSANT, Ann. Soc. Linn. Lyon, xxii, 1876, 205; Cat. Ois.-Mouch, 1875, 6.

[*Eupherusa*] *nigriventris* SIMON, Cat. Troch., 1897, 21.

*Callipharus nigriventris* ELLIOT, Classif. and Synop. Troch., 1879, 211.—ZELEDÓN, Cat. Aves de Costa Rica, 1882, 21; Anal. Mus. Nac. Costa Rica, i, 1887, 122 (Naranjo de Cartago, Costa Rica).—SHARPE, in Gould's Suppl. Troch., 1887, pl. 54.—SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 67 (Cordillera del Chucu and Calobre, Verágua; Costa Rica).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 270 (Cervantes and Peorsnada, Costa Rica, etc.).—BOUCARD, The Hum. Bird, ii, 1892, 81 (Verágua); Gen. Hum. Birds, 1894, 171 (Naranjo, Costa Rica; Verágua).

[*Polytmus*] *nigriventris* GRAY, Hand-list, i, 1869, 133, no. 1702.

[*Thaumatias*] *nigriventris* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 92.

*E[lvira] nigriventris* HARTERT, Das Tierreich, Troch., 1900, 90 (monogr.).

*Elvira nigriventris* BANGS, Proc. New Engl. Zool. Club, iii, 1902, 29 (Volcán de Chiriquí, 6,000–7,000 ft.).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 534 (Caribbean slope, Costa Rica).—FERRY, Pub. 146, Field Mus. N. H., orn. ser., i, no. 6, 1910, 263 (Coliblanco, Costa Rica).

[*Elvira*] *nigriventris* SHARPE, Hand-list, ii, 1900, 116.

#### Genus ELVIRA Mulsant and Verreaux.

*Elvira* MULSANT and VERREAUX, Classif. Troch., 1865, 32. (Type, *Trochilus* (*Thaumatias*) *chionura* Gould.)

*Lawrencius* (not *Lawencia* Ridgway, 1886) BOUCARD, Gen. Hum. Birds (in Humming Bird, iv, pt. 3), sig. s, Sept., 1894, 173. (Type, *Eupherusa cupreiceps* Lawrence.)

Small Trochilidæ (length about 75 mm.) closely resembling *Eupherusa*, but with maxillary tomium entirely smooth,<sup>a</sup> the bill relatively smaller (rather shorter than head), tail double-rounded or emarginate and secondaries green and dusky, instead of cinnamon-rufous.

Bill rather shorter than head, nearly terete, straight (*E. chionura*) or distinctly decurved (*E. cupreiceps*); culmen rounded except basally, where contracted into a distinct ridge; tomia smooth;<sup>a</sup> mandible with lateral median groove indistinct. Nasal operculum rather narrow, tumid, mostly unfeathered, the frontal feathering extending on each side of culmen to about the middle of nasal operculi. Tarsus feathered; middle and inner toes about equal in length, the outer slightly shorter, the hallux slightly shorter than outer toe. Wing decidedly more than three times as long as exposed culmen, the outermost

<sup>a</sup> Apparently, however, sometimes there are, when a magnifying glass is used, faint indications of serrations.

primary longest. Tail half as long as wing (*E. cupreiceps*) to more than half as long (*E. chionura*), emarginate, double-rounded, or rounded (in female of *E. cupreiceps*), the rectrices rather broad and soft.

*Coloration*.—Above metallic green, bronze-green or (in *E. cupreiceps*) bronze passing into purple or copper bronze on head and upper tail-coverts; lateral rectrices white, tipped with black or grayish or (in females) crossed by a subterminal band of the same. Adult males with under parts bright metallic green, the under tail-coverts (abdomen also in *E. chionura*) white; adult females grayish white beneath, spotted or spangled with metallic green.

*Range*.—Costa Rica and western Panamá. (Two species.)

The two species which, so far as known, constitute this group are quite different in certain structural details, and are scarcely strictly congeneric. Except for its green and dusky (instead of cinnamon-rufous) secondaries and emarginate (instead of truncate or slightly rounded) tail and absence of minute serrations on maxillary tomium *E. chionura* might well be placed in *Eupherusa*. *E. cupreiceps*, on the other hand, has a distinctly decurved as well as much more slender bill, and the tail is relatively shorter (not more than half as long as wing).

#### KEY TO THE SPECIES OF ELVIRA.

- a. Bill very slightly if at all decurved; lateral rectrices broadly tipped with black (male) or crossed by a broad subterminal band of black (female); adult male with pileum metallic grass-green, the lower abdomen and hinder flanks white; adult female with lateral under parts more extensively green. (Western Panamá and southwestern Costa Rica.).....*Elvira chionura* (p. 402).
- aa. Bill strongly decurved; lateral rectrices tipped with pale gray (male) or crossed by a narrow subterminal bar of dusky (female); adult male with pileum coppery bronze, the lower abdomen and hinder flanks metallic green; adult female with lateral under parts less extensively green. (Costa Rica.)

*Elvira cupreiceps* (p. 404).

#### ELVIRA CHIONURA (Gould).

##### WHITE-TAILED EMERALD.

*Adult male*.—Above metallic bronze-green, the upper tail-coverts and middle rectrices usually more bronzy; three outer rectrices (on each side) pure white, broadly (for about 5–7 mm. on outermost) and abruptly tipped with black (passing into dull bronzy terminally); remiges purplish slaty brown, the secondaries tinged with chestnut, the innermost ones more or less green; chin, throat, chest, breast (except medially), sides, and flanks bright metallic green (more yellowish green anteriorly), the feathers pale gray or dull grayish white beneath surface, becoming darker grayish basally; abdomen, middle line of lower breast, anal region, and under tail-coverts pure white, the shorter lateral under tail-coverts sometimes spotted with



metallic green; bill black, the mandible pale brownish basally; iris dark brown; feet dusky; length (skins), 74–88 (80); wing, 49–54.5 (50.3); tail, 26.5–30.5 (28.3); culmen, 14–15.5 (14.7).<sup>a</sup>

*Adult female*.—Above bright metallic grass green or bronze-green, the longer upper tail-coverts and four middle rectrices metallic bronze or greenish bronze; three lateral pairs of rectrices white, the third very broadly tipped with black, the fourth and fifth crossed by a broad subterminal band of the same; remiges dusky, faintly glossed with purplish; chin, throat, median line of chest and breast, abdomen, hinder flanks, anal region, and under tail-coverts pure white, the lower throat and chest sometimes flecked with metallic green; rest of under parts metallic emerald green, the feathers grayish beneath surface; bill blackish, the mandible paler basally; iris dark brown; feet brownish (in dried skins); length (skins), 74–80 (76); wing, 45.5–48 (46.8); tail, 24–26.5 (25.4); culmen, 14.5–15.5 (15.1).<sup>b</sup>

Western Panamá (Calovévora; David; Boquete; Volcán de Chiriquí) and southwestern Costa Rica (Dota; Santa Maria and Laguaría, Dota; Boruca).

*Trochilus (Thaumatias) chionura* GOULD, Proc. Zool. Soc. Lond., 1850, 162 (David, Chiriquí, Panamá, alt. 2,000–3,000 ft.; coll. J. Gould).

*Thaumatias chionurus* GOULD, Mon. Troch., v, pt. iii, 1852, pl. 300; Introd. Troch., oct. ed., 1861, 153.—LAWRENCE, Ann. Lyc. N. Y., viii, 1868, 349 (crit.).—ELLIOT, Ibis, 1878, 48 (Costa Rica; synonym; crit.).—BOUCARD, Notes quelques Troch., 1873, 11 (Costa Rica; Panamá).

[*Thaumatias*] *chionurus* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 92.

[*Thaumatias*] *chionura* BONAPARTE, Rev. et Mag. de Zool., 1854, 255.

*Thaumatias chionurus* SALVIN, Proc. Zool. Soc. Lond., 1867, 156 (David, etc., Panamá; crit.); 1870, 210 (Volcán de Chiriquí and Calovévora, Panamá).

[*Leucippus*] *chionurus* REICHENBACH, Aufz. der Colib., 1854, 11; Troch. Enum., 1855, 8, pl. 780, figs. 4313–4315.

*A[gyrtría] chionura* CABANIS and HEINE, Mus. Hein., iii, 1860, 32, footnote (Veragua).—HEINE, Journ. für Orn., 1863, 183.

*Elvira chianura* MULSANT and VERREAUX, Classif. Troch., 1866, 32.

*Eupherusa chionura* LAWRENCE, Ann. Lyc. N. Y., ix, 1868, 127 (Dota, Costa Rica).—FRANTZIUS, Journ. für Orn., 1869, 317 (Costa Rica).

<sup>a</sup> Thirteen specimens.

<sup>b</sup> Eight specimens.

| Locality.                                  | Wing. | Tail. | Ex-<br>posed<br>culmen. |
|--------------------------------------------|-------|-------|-------------------------|
| MALES.                                     |       |       |                         |
| Five adult males from Costa Rica.....      | 49.9  | 27.4  | 14.6                    |
| Eight adult males from western Panamá..... | 50.7  | 28.8  | 14.7                    |
| FEMALES.                                   |       |       |                         |
| Six adult females from Costa Rica.....     | 46.8  | 25.4  | 15.1                    |
| Two adult females from western Panamá..... | 46.7  | 25.5  | 15                      |

[*Eupherusa*] *chionura* SIMON, Cat. Troch., 1897, 21.

[*Polytmus*] *chionurus* GRAY, Hand-list, i, 1869, 129, no. 1637.

*Elvira chionura* MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., i, livr. 4, 1874, 266; iv, livr. 3, 1878, 179.—ELLIOT, Classif. and Synop. Troch., 1879, 210.—ZELEDÓN, Cat. Aves de Costa Rica, 1882, 21; Anal. Mus. Nac. Costa Rica, i, 1887, 122.—SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 74 (Costa Rica; Chiriquí and Calovévora, Verágua).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 273.—BOUCARD, The Hum. Bird, ii, 1892, 81 (Verágua); Gen. Hum. Birds, 1894, 172.—BANGS, Proc. New Engl. Zool. Club, iii, 1902, 29 (Boquete and Volcan de Chiriquí, 4,000–7,700 ft.); Auk, xxiv, 1907, 296 (Boruca, Costa Rica).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 535 (Costa Rica).

[*Elvira*] *chionura* MULSANT, Ann. Soc. Linn. Lyon, xxii, 1876, 205.—SHARPE, Hand-list, ii, 1900, 116.

*E[lvira] chionura* HARTERT, Das Tierreich, Troch., 1900, 90 (monogr.).

*Eupherusa niveicauda* LAWRENCE, Ann. Lyc. Nat. Hist. N. Y., viii, 1867, 134 (Dota, Costa Rica; coll. U. S. Nat. Mus.).

### ELVIRA CUPREICEPS (Lawrence).

#### COPPERY-HEADED EMERALD.

Similar to *E. chionura*, but bill distinctly decurved and adult male with upper tail-coverts bright copper-bronze, pileum and middle rectrices bronze instead of green, no white on abdomen, and lateral rectrices tipped (less extensively) with light gray instead of black.

*Adult male*.—Pileum dull coppery bronze; hindneck, back, scapulars, rump, and wing-coverts bronze-green; upper tail-coverts bright coppery bronze; middle pair of rectrices bronze (much less coppery than upper tail-coverts); four outer rectrices (on each side) pure white, the three outer tipped with pale gray, the fourth tipped (more abruptly) with black; remiges dusky purplish brown, the inner secondaries mostly bronze-green; under parts bright yellowish metallic green, the under tail-coverts pure white, the anal tufts grayish white; maxilla black; mandible pale (flesh color in life?), dusky terminally; iris dark brown; feet grayish brown (in dried skins); length (skins), 74–79 (77); wing, 46–51 (48.4); tail, 24–27 (25.4); culmen, 13.5–15 (14.1).<sup>a</sup>

*Adult female*.—Above metallic green (less bronzy than in adult male), duller on pileum; upper tail-coverts and middle pair of rectrices bright bronze (the former usually more coppery); four outer rectrices white with a V-shaped subterminal bar of gray or dusky, the fourth tipped with black or black and gray and edged for terminal half (more or less) with blackish; remiges as in adult male; under parts dull white or grayish white, passing into pure white posteriorly, the sides more or less (sometimes extensively)<sup>b</sup> spotted

<sup>a</sup> Ten specimens.

<sup>b</sup> Occasionally the green spotting extends across chest or breast.

with metallic green; bill, etc., as in adult male; length (skins), 74–81 (76.6); wing, 41–46 (44.6); tail, 22.5–25.5 (23.1); culmen, 13.5–15.5 (14.6).<sup>a</sup>

*Immature(?) male*.—Similar to the adult male, but coloration slightly duller (especially on under parts of body), and four lateral rectrices (on each side) tipped with black or grayish black.<sup>b</sup>

Costa Rica (Barranca; Naranjo de Cartago; Tucurríqui; Bonilla; Carrillo; Cariblanco de Sarapiquí).

*Eupherusa cupreiceps* LAWRENCE, Ann. Lyc. Nat. Hist. N. Y., viii, 1867, 348 (Barranca, Costa Rica; coll. U. S. Nat. Mus.); ix, 1868, 127 (Barranca).—FRANTZIUS, Journ. für Orn., 1869, 317 (Costa Rica).—BOUCARD, Notes quelques Troch., 1873, 13 (Costa Rica).

*Elvira cupreiceps* MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., i, livr. 4, 1874, 268; iv, livr. 3, 1878, 179.—ELLIOT, Classif. and Synop. Troch., 1879, 210.—GOULD, Suppl. Troch., 1880, pl. 53.—ZELEDÓN, Cat. Aves de Costa Rica, 1882, 21; Anal. Mus. Nac. Costa Rica, 1887, 122 (Naranjo de Cartago, Costa Rica).—SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 75 (Tucurríqui, Costa Rica).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 273.—CARRIKER, Ann. Carnegie Mus., vi, 1910, 535 (Caribbean slope, Costa Rica).

*E[lvira] cupreiceps* HARTERT, Das Tierreich, Troch., 1900, 91 (monogr.).

*[Elvira] cupreiceps* SIMON, Cat. Troch., 1897, 21.—SHARPE, Hand-list, ii, 1900, 116.

*[Polytmus] cupreiceps* GRAY, Hand-list, i, 1869, 128, no. 1625.

*[Thaumatias] cupreiceps* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 92.

*Thaumatias cupreiceps* BOUCARD, Proc. Zool. Soc. Lond., 1878, 71 (Naranjo de Cartago, Costa Rica).

*Lawrencius cupreiceps* BOUCARD, Gen. Hum. Birds, Sept., 1894, 173.

*[Elvira] caeruleiceps* (error) MULSANT, Ann. Soc. Linn. Lyon, xxii, 1876, 328.

### Genus AMIZILIS Gray.

*Amizilis* GRAY, List Gen. Birds, 1840, 14. (Type, "*A. latirostris*, (Sw.) n. Ois. M., pl. 12. *Or. amizili* Less."=*Orthorhynchus amazilia* Lesson; see Oberholser, Proc. Ac. Nat. Sci. Phila., 1899, 206, 207.)

*Amizillis* BANGS, Proc. New Engl. Zool. Club, ii, Sept. 20, 1900, 20.

*Amazilia* LESSON, L'Echo du Monde Sav., sér. 2, viii, no. 32, Oct. 22, 1843, col. 757. (Type ?c.)

*Amazilius* (emendation) BONAPARTE, Consp. Av., i, 1850, 77. (Type, *Orthorhynchus amazilia* Lesson.)

*Amazilis* (ex Lesson, 1832) GRAY, List Gen. Birds, 1855, 23. (Type, *Ornismya amazili* Lesson.)

*Amazillia* (emendation) SCLATER and SALVIN, Ibis, 1859, 130.

*Amazilicus* (emendation) BONAPARTE, Compt. Rend., 1850, 382.

*Amazilina* EUDES-DESLONGCHAMPS, Ann. Mus. Hist. Nat. Caen, i, 1880, 391, 405. (Type, *Trochilus fuscicaudatus* Fraser.)

<sup>a</sup> Ten specimens.

<sup>b</sup> Three specimens (two of them from Cariblanco de Sarapiquí, the other from an unknown locality in Costa Rica) agree in the above characters. It is possible that they may indicate intergradation or hybridism with *E. chionura*.

<sup>c</sup> The species mentioned are: "*Ornismia*" *lumachella* Lesson, *O. eximia* Delattre, *O. cinnamomea* Lesson (= *Amizilis rutila*), *O. rufula* Delattre, and *O. clarissæ* Longue-mare, only one of which, *O. cinnamomea*, is a member of this genus!



*Pyrrhophæna* <sup>a</sup> CABANIS and HEINE, Mus. Hein., iii, March, 1860, 35. (Type, *Orthorhynchus amazilia* Lesson.)

*Eranna* <sup>b</sup> HEINE, Journ. für Orn., xi, May, 1863, 187. (Type, *Ornismya cinnamomea* Lesson.)

*Myletes* MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., i, livr. 4, 1874, 284. (Type, *Trochilus yucatanensis* Cabot.)

*Cyanomyia* BONAPARTE, Rev. et Mag. de Zool., May, 1854, 254. (Type, as designated by Gray, 1855, "*Trochilus quadricolor* Vieillot," i. e., *T. verticalis* Lichtenstein.)

*Uranomitra* REICHENBACH, Journ. für Orn., 1853, Extraheft, 1854, Aufz. der Colibr., 10. (Type, as fixed by Gray, 1855, "*Trochilus quadricolor* Vieillot," i. e., *T. verticalis* Lichtenstein.)

Medium-sized Trochilidæ (length about 95–110 mm.), with the straight or very faintly decurved stout bill much broader than deep, longer than head, distinctly widened basally; nasal operculum thick or tumid, with more than anterior half exposed; tail nearly truncated to slightly double-rounded or emarginate, and tail rufous-chestnut, olive-bronzy, or dull greenish bronze, darker subterminally.

Bill decidedly longer than head (more than one-third but much less than one-half as long as wing), straight or very faintly decurved, stout, much broader than deep, abruptly widened basally; nasal operculum rather thick or tumid, exposed for much the greater part; wing normal; tail between one-half and two-thirds as long as wing, nearly truncate, slightly double-rounded, or emarginate; tarsi feathered; outer toe nearly as long as middle toe, the inner decidedly shorter.

*Coloration*.—Above metallic green, bronze-green, or bronzy, the pileum sometimes violet-blue; tail rufous-chestnut, olive-bronzy, or dark bronze-greenish; under parts varying from mostly green, with cinnamon-rufous or white abdomen to wholly cinnamon-rufous or entirely white. Sexes alike.

*Range*.—Northern Mexico to Peru. (Twenty-three species.)

I am not able to give a better diagnosis of this genus for the reason that its limits are very indefinite, and its relations to *Agyrtria* and *Saucerottia* uncertain. Either the three so-called genera must be combined into one, or each of them must be further restricted and a considerable number of genera recognized before their definition can be made more precise. Even as here restricted I have been obliged to place in *Amizilis* not only certain species formerly referred to *Uranomitra* Reichenbach (e. g. *U. violiceps* and *U. viridifrons*), in this following Hartert, but also two species of *Agyrtria* (*A. tephrocephala* and *A. maculicauda*), which, so far as I am able to see, while agreeing with true *Agyrtria* in coloration, at the same time agree minutely in shape of the bill and nasal operculi with typical *Amizilis*. In short,

<sup>a</sup> "Von *πυρρός* (röthlich) und *φαίνω* (leuchten, glänzen)." (Cabanis and Heine.)

<sup>b</sup> "Von *ἐρᾶνος* (lieblich, anmuthig)." (Heine.)

the group of species composing the three so-called genera here tentatively recognized constitute a very difficult problem, for, apparently, no matter whether they are combined into a single genus or divided into several the definition of the group or groups is equally difficult in either case.

## KEY TO THE SPECIES AND SUBSPECIES OF AMIZILIS.

- a. Chin and throat not white.
- b. Throat and chest metallic green.
- c. Breast and abdomen not white.
  - d. Lores chestnut; sides, anterior flanks, and under wing-coverts uniform metallic green or bronze-green; abdomen grayish (sometimes tinged with buffy). (*Amizilis tzacatl*.)
  - e. Abdomen brownish-gray. (Andes of Ecuador and Venezuela through Colombia to southeastern Mexico.).....*Amizilis tzacatl tzacatl* (p. 408).
  - ee. Abdomen decidedly buffy grayish (much paler in females). (Western Ecuador and southwestern Colombia.)  
*Amizilis tzacatl jucunda* (extralimital).<sup>a</sup>
  - dd. Lores not chestnut; sides, anterior flanks, and under wing-coverts at least partly cinnamon-rufous or cinnamon-buff. (*Amizilis yucatanensis*.)
  - e. Under parts of body deeper cinnamon-rufous, the sides without mixture of metallic bronze or bronze-green. (Tabasco, Campeche, Yucatan, and British Honduras.).....*Amizilis yucatanensis yucatanensis* (p. 412).
  - ec. Under parts paler cinnamon-rufous or cinnamon-buff, the sides glossed or intermixed with greenish bronze or bronze-green.
  - f. Under parts of body light cinnamon-rufous or vinaceous-cinnamon; upper parts more greenish bronze. (States of Vera Cruz, Puebla, Oaxaca, and Chiapas.)...*Amizilis yucatanensis cerviniventris* (p. 414).
  - ff. Under parts of body light cinnamon-buff to pale pinkish buff; upper parts more bronzy. (Southern Mexico, Tamaulipas, and Nuevo León.).....*Amizilis yucatanensis chalconota* (p. 415).
  - cc. Breast and abdomen white; tail glossed with metallic purple. (Western Mexico.).....*Amizilis forreri* (p. 416).
  - bb. Throat and chest cinnamon-rufous (more or less deep), like rest of under parts.
  - c. Sides of neck cinnamon-rufous.
  - d. Smaller (wing 51-60, tail 31-37, culmen 19.5-23.5). (*Amizilis rutila*.)
  - e. Coloration pale, the under parts vinaceous-rufous or light cinnamon-rufous. (State of Sinaloa, western Mexico, to Yucatan and eastern Guatemala and thence to western Costa Rica.).....*Amizilis rutila rutila* (p. 416).
  - ee. Coloration darker, the under parts deep cinnamon-rufous. (Pacific slope of Chiapas and Guatemala.).....*Amizilis rutila corallirostris* (p. 419).
  - dd. Larger (wing 66-69.5, tail 42-45.5, culmen 23.5-27). (Tres Marias Islands, western Mexico.).....*Amizilis graysoni* (p. 419).
  - cc. Sides of neck metallic greenish bronze. (Northwestern Costa Rica.)  
*Amizilis bangsi* (p. 420).

<sup>a</sup> *E[ranna] jucunda* Heine, Journ. für Orn., 1863, 188 (Babahoyo and Esmeraldas, w. Ecuador; coll. Heine Mus.).—[*Ariana riefferi*] var. *jucunda* Mulsant, Ann. Soc. Linn. Lyon, xxii, 1876, 206.—*Amazilia riefferi jucunda* Berlepsch and Taczanowski, Proc. Zool. Soc. Lond., 1883, 568 (Chimbo, w. Ecuador); 1884, 306 (Cayandelé and Pinampunga, w. Ecuador).—*Amazilia fuscicaudata jucunda* Hartert, Novit. Zool., v, 1898, 496 (Chimbo; habits).—[*mazilia*] *fuscicaudata jucunda* Hartert, Das Tierreich, Troch., 1900, 58.—*Amizilis tzacatl jucunda* Oberholser, Proc. U. S. Nat. Mus., xxiv, no. 1258, Jan., 1902, 317 (Santo Domingo, w. Ecuador).

aa. Chin and throat white.

b. Sides of neck without metallic blue; tail bronzy olive to coppery bronze.

c. Sides of neck mostly white; under tail-coverts white, and under parts of body almost wholly white.

d. Forehead and crown dusky greenish or dull bluish. (Southwestern Mexico.)

*Amizilis viridifrons* (p. 421).

dd. Forehead and crown bright metallic blue or violet.

e. Tail dull greenish bronze. (Western Mexico.)

*Amizilis verticalis* (p. 422).

ee. Tail bronze to coppery bronze. (Southwestern Mexico.)

*Amizilis violiceps* (p. 424).

cc. Sides of neck metallic green; under tail-coverts dull olive-bronze to coppery bronze margined with white; under parts of body with only the median line white.

d. Bill larger (culmen 18.5–23); tail, sides, flanks, and under tail-coverts more greenish or olive bronze. (*Amizilis cyanocephala*.)

e. Tail duller bronzy, the rump and upper tail-coverts more faintly glossed with bronze. (Southeastern Mexico, including State of Chiapas.)

*Amizilis cyanocephala cyanocephala* (p. 425).

ee. Tail brighter bronzy, the rump and upper tail-coverts more strongly glossed with bronze. (Guatemala, Honduras, and British Honduras.)

*Amizilis cyanocephala guatemalensis* (p. 427).

dd. Bill smaller (culmen 13.5); tail, sides, flanks, and under tail-coverts more coppery bronze. (Honduras?).....*Amizilis microrhyncha* (p. 428).

bb. Sides of neck metallic blue; tail dark metallic green or bronze-green. (Northwestern Mexico and southern Arizona.).....*Amizilis salvini* (p. 429).

### AMIZILIS TZACATL TZACATL (De la Llave).

#### RIEFFER'S HUMMING BIRD.

*Adult male*.—Above metallic bronze-green or greenish bronze, the pileum darker and duller; upper tail-coverts and tail chestnut, the rectrices margined terminally with dusky bronze, the coverts sometimes partly bronze or bronze-green; remiges dusky, faintly glossed with violet; lores chestnut; malar region, chin, throat, chest, upper breast, and sides of lower breast bright metallic yellowish emerald-green, the feathers of chin and upper throat pale buff or buffy white basally, this much exposed on chin; abdomen and median portion of lower breast brownish gray; sides and flanks bronze-green; under tail-coverts cinnamon-rufous; femoral tufts white; bill brownish (reddish in life), dusky terminally, the maxilla sometimes mostly (rarely wholly?) blackish; iris dark brown; feet dusky (in dried skins); length (skins), 86–105 (97); wing, 46–61 (58.3); tail, 29.5–35 (32.8); culmen, 18–23 (20.8).<sup>a</sup>

*Adult female*.—Similar to the adult male and perhaps not always distinguishable, but usually with the green of under parts more broken by whitish margins to the feathers, gray of abdomen paler, and cinnamon-rufous loreal streak less distinct, sometimes obsolete;

<sup>a</sup> Sixty specimens.



length (skins), 86-102 (95); wing, 52-58 (54.9); tail, 30-35 (32.7); culmen, 20-24 (21.3).<sup>a</sup>

*Young*.—Essentially like adults, but anterior under parts much duller metallic green, the chin and upper throat (at least) sometimes grayish brown or brownish gray, with little if any metallic gloss, and feathers of pileum, rump, etc., tipped (more or less distinctly) with rusty.

Lower Rio Grande Valley in Texas (Fort Brown <sup>b</sup>) and southward through eastern Mexico, in States of Tamaulipas (Tampico), Vera Cruz (Playa Vicente; Córdoba; Orizaba; Xochiapa; Choapám; Buena Vista), Oaxaca (Guichicovi; Tuxtpec), Tabasco (Teapa; Frontera; San Juan Bautista), and Chiapas (Tumbalá; Yajalón), Guatemala (Dueñas; Cobán; Choctúm; Lanquín; Guatemala City; Los Amates, Yzabál; Santa Ana, Petén), British Honduras (Orange Walk; Corosál; Belize; Cayo), Honduras (Rio Segovia; Céiba; Yaruca), Nicaragua (Chontales; Los Sábalos; Greytown; Matagalpa; La Libertad; San Emilis; Rio Escondido), Costa Rica (San

<sup>a</sup> Thirty-six specimens.

| Locality.                                                           | Wing. | Tail. | Ex-<br>posed<br>culmen. |
|---------------------------------------------------------------------|-------|-------|-------------------------|
| MALES.                                                              |       |       |                         |
| Ten adult males from southeastern Mexico.....                       | 55.4  | 32.2  | 20.7                    |
| Six adult males from Guatemala.....                                 | 56.3  | 31.9  | 19.2                    |
| Seven adult males from British Honduras.....                        | 59.7  | 33.1  | 20.1                    |
| One adult male from Honduras.....                                   | 58    | 32.5  | 20                      |
| Eight adult males from Nicaragua.....                               | 56.7  | 31.7  | 20.2                    |
| Ten adult males from eastern Costa Rica.....                        | 59.5  | 33.9  | 22                      |
| Four adult males from western Costa Rica.....                       | 57.4  | 34.3  | 22.2                    |
| Three adult males from Panamá.....                                  | 56.2  | 32.7  | 20.3                    |
| Ten adult males from Colombia.....                                  | 54.5  | 33.4  | 21.2                    |
| One adult male from Venezuela.....                                  | 55.5  | 32.5  | 21.5                    |
| Two adult males ( <i>A. t. jucunda</i> ) from western Ecuador.....  | 56    | 32.7  | 21.5                    |
| FEMALES.                                                            |       |       |                         |
| Three adult females from southeastern Mexico.....                   | 54.2  | 32    | 21.5                    |
| One adult female from Guatemala.....                                | 54.5  | 33.5  | 20.5                    |
| Ten adult females from Nicaragua.....                               | 54.9  | 32    | 21.1                    |
| Ten adult females from eastern Costa Rica.....                      | 56.1  | 33.4  | 22.9                    |
| Three adult females from western Costa Rica.....                    | 55.3  | 33.3  | 22.7                    |
| Three adult females from Panamá.....                                | 54.2  | 33    | 21                      |
| Six adult females from Colombia.....                                | 53.5  | 31.2  | 21.7                    |
| One adult female ( <i>A. t. jucunda</i> ) from western Ecuador..... | 56    | 32    | 23.5                    |

With exception of specimens from western Ecuador, which differ from all others in the decidedly more buffy and (especially in females) slightly paler color of the abdomen, I am not able to distinguish satisfactorily specimens from any of the geographic areas indicated above, and therefore, for the present at least, consider them all as representing a single subspecies.

<sup>b</sup> Apparently of purely accidental occurrence on north side of Rio Grande.

José; San Pedro de Mojón; Tucurríqui; Carrillo; Bonilla; Guayabo; Juan Viñas; Volcan de Irazú; Jiménez; Isla Uvita, Puerto Limón; Talamanca; Boca Matina; Escazú; Cerro de la Candelaria; Guápiles; El Hogár; Rio Frio; Orosí; Boruca; Barranca, Boruca; Boca Barranca, Punta Arenas; Pozo Azul de Pirrís; Pigres; Esparta; El General; Santa Maria de Dota; Bolsón; Miravalles), Panamá (David; Chitra; Boquete de Chitra; Calovévora; Cordillera del Chucu; Paraiso; Colón; Lion Hill; Boca del Toro), Colombia (Bogotá; Santa Marta, Cacagualito, Bonda, and Don Diego, Santa Marta; Don Amo; lower Magdalena; Buritaca; Barranquilla; Medellín; San Nicolás; Fusagasugá), to Venezuela (Mérida).

*T[rochilus] tzacatl* DE LA LLAVE, Registro Trimestre, ii, no. 5, Jan., 1833, 48 (Mexico; see Richmond, Auk, xvi, 1899, 324).

*Amazilia* or *Amazilis tzacatl* RICHMOND, Auk, xvi, Oct., 1899, 324, in text.

[*Amazilia*] *tzacatl* SHARPE, Hand-list, ii, 1900, 108, part.

*Amizillis tzacatl* BANGS, Proc. New Engl. Zool. Club, iii, Jan. 30, 1902, 29 (Volcán de Chiriquí, Panama, 5,000 ft.).

*Amizilis tzacatl* BAILEY (Florence M.), Handb. Birds W. N. Am., [Nov.?] 1902, 243.—THAYER and BANGS, Bull. Mus. Comp. Zool., xlv, 1905, 94 (Gorgona I., Colombia); 216 (Sabana de Panamá).—AMERICAN ORNITHOLOGISTS' UNION, Check List, 3rd ed., 1910, 205.—FERRY, Pub. 146, Field Mus. N. H., orn. ser., i, no. 6, 1910, 263 (Guayabo, Costa Rica).

*Amazilis tzacatl* DEARBORN, Pub. 125, Field Mus. N. H., 1907, 98 (Los Amates, Guatemala).

(?) *Trochilus fuscicaudatus* FRASER, Proc. Zool. Soc. Lond., 1840, 17 (Chachapoyas, e. Peru;<sup>a</sup> coll. Derby Mus.).

*H[ylocharis] fuscicaudatus* GRAY, Gen. Birds, i, Dec., 1848, 114.

*Amazilia fuscicaudata* RIDGWAY, Proc. U. S. Nat. Mus., i, Oct. 2, 1878, 147 (Ft. Brown, Texas; synonymy; descr., etc.); iii, 1880, 187, 219, 233, 318; x, 1887, 591 (Rio Segovia, Honduras); Nom. N. Am. Birds, 1881, no. 345; Rep. U. S. Nat. Mus. for 1890 (1891), 366, pl. 43 (monogr.; habits); Condor, vii, 1905, 154, in text (Pigres, Costa Rica).—ELLIOT, Classif. and Synop. Troch., 1879, 220.—ALLEN, Bull. Nutt. Orn. Club, v, 1880, 90 (Ft. Brown, Texas).—NUTTING, Proc. U. S. Nat. Mus., v, 1882, 398 (La Palma de Nicoya, Costa Rica; habits); v, 1883, 406 (Los Sábalos, Nicaragua).—ZELEDÓN, Cat. Aves de Costa Rica, 1882, 21; Proc. U. S. Nat. Mus., viii, 1885, 110 (Costa Rica); Anal. Mus. Nac. Costa Rica, i, 1887, 122 (Naranjo de Cartago; San José).—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886, no. 438.—BOUCARD, The Hum. Bird, ii, 1892, 80 (Bogotá, Colombia); v, 1895, 7 (Rio Dagua, Colombia); Gen. Hum. Birds, 1895, 198.—RICHMOND, Proc. U. S. Nat. Mus., xvi, 1893, 517 (Rio Escondido, Nicaragua; habits).—BENDIRE, Life Hist. N. Am. Birds, ii, 1895, 223.—BANGS, Proc. Biol. Soc. Wash., xii, 1898, 135 (Santa Marta, Colombia).—LANTZ, Trans. Kansas Ac. Sci. for 1896-97 (1899), 221 (Santo Tomás, Guatemala).

*A[mazilia] fuscicaudata* RIDGWAY, Man. N. Am. Birds, 1887, 317.

*Amazilis fuscicaudatus* EUDES-DESLONGCHAMPS, Ann. Mus. Caen, i, 1880, 405.

*Amizillis fuscicaudata* ALLEN, Bull. Am. Mus. N. H., xiii, Aug. 25, 1900, 139 (Bonda and Cacagualito, Santa Marta, Colombia).—BANGS, Proc. New Engl. Zool. Club, ii, Sept. 20, 1900, 20 (Loma del León, Panamá).

<sup>a</sup> The type-locality has been questioned, and the opinion expressed that the type is of Bogotá make; but I have mislaid the slip containing the reference.

- [*Eranna*] *fuscicaudata* HEINE and REICHENOW, Nom. Mus. Hein. Orn., 1890, 179 (Colombia; Veragua?).
- Amizilis fuscicaudata* OBERHOLSER, Proc. Ac. Nat. Sci. Phila., June 2, 1899, 208.—BANGS, Auk, xviii, 1901, 359 (Divala, Panamá).
- A[mazilia] fuscocaudata* COUES, Key N. Am. Birds, 2d ed., 1884, 466.
- [*Chlorastes. γ. Saucerottia*] *fuscicauda* REICHENBACH, Aufz. der Colibr., 1854, 8.
- [*Chlorestes*] *fuscicauda* REICHENBACH, Troch. Enum., 1855, 4, pl. 696, figs. 4552, 4553.
- Amazilia fuscicaudata fuscicaudata* HARTERT, Novit. Zool., v, 1898, 18 (crit.).
- [*Trochilus*] *riefferi* BOURCIER and Mulsant, Ann. Sci. Phys. et Nat. Lyon, vi, livr. 1, 1843, 45 (Fusagasugá, Colombia).—BOURCIER, Rev. Zool., 1843, 103.
- [*Polytmus*] *riefferi* GRAY, Gen. Birds, i, Dec., 1848, 108.
- [*Polytmus*] *riefferi* GRAY, Hand-list, i, 1869, 132, no. 1680.
- [*Amazilius*] *riefferi* BONAPARTE, Conspect. Av., i, 1850, 78; Rev. et Mag. de Zool., 1854, 254.
- Amazilius riefferi* SCLATER, Proc. Zool. Soc. Lond., 1856, 140 (Chiriquí); 1857, 16 (Bogotá).
- [*Amazilia*] *riefferi* REICHENBACH, Aufz. der Colibr., 1854, 10; Troch. Enum., 1855, 8, pl. 775, figs. 4798, 4799.
- [*Amazilia*] *riefferi* SIMON, Cat. Troch., 1897, 13.
- Amazilia riefferi* GOULD, Mon. Troch., pt. xix, 1860, pl. 14 (vol. v, 1861, pl. 311).—SCLATER, Proc. Zool. Soc. Lond., 1860, 94 (Colombia); Cat. Am. Birds, 1862, 314, part (Cobán, Guatemala; Barranquilla, Colombia).—SCLATER and SALVIN, Ibis, 1864, 365 (Panamá); Proc. Zool. Soc. Lond., 1879, 530 (Colombia; descr. nest).—SALVIN and SCLATER, Ibis, 1860, 40 (Yzabál, Guatemala).—SALVIN, Ibis, 1860, 270 (Cobán and Yzabál, Guatemala); 1872, 320 (Chontales, Nicaragua); Proc. Zool. Soc. Lond., 1867, 156 (David, Panamá); 1870, 210 (Calovévora and Cordillera del Chucu, Panamá); Cat. Birds Brit. Mus., xvi, 1892, 216, part (Mexican, Central American, Colombian, and Venezuelan localities and references).—WYATT, Ibis, 1871, 378 (San Nicolás, Colombia, 3,000 ft.).—LAWRENCE, Ann. Lyc. N. Y., vii, 1862, 292 (Panamá).—MULSANT and VERREAUX, Classif. Troch., 1866, 35.—BERLEPSCH, Journ. für Orn., 1884, 311 (Bucaramanga, Colombia; crit.).—SALVIN and GODMAN, Biol. Centr.-Am., ii, 1892, 300.—CHERRIE, Expl. Zool. Merid. Costa Rica, 1893, 44 (Buenos Aires, Costa Rica).—UNDERWOOD, Ibis, 1896, 442 (Volcán de Miravalles and Bagaces, Costa Rica).—SIMON and DALMAS, Ornith., xi, 1901, 221 (Naranjo, w. Colombia).
- Amazilia riefferi* SCLATER and SALVIN, Ibis, 1859, 130 (Guatemala).
- [*Eranna*] *riefferi* HEINE, Journ. für Orn., 1863, 188 (Colombia).
- Ariana riefferi* MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., i, livr. 4, 1874, 316 (Fusagasugá, Colombia); iv, livr. 3, 1878, 184 (synonymy).
- [*Ariana*] *riefferi* MULSANT, Ann. Soc. Linn. Lyon, xxii, 1876, 206.
- [*Amazilia*] *riefferi* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 92.
- [*Pyrhophæna*] *riefferi* CABANIS and HEINE, Mus. Hein., iii, March, 1860, 36 (Veragua; Colombia).
- Pyrhophæna riefferi* GOULD, Introd. Troch., oct. ed., 1861, 158.—LAWRENCE, Ann. Lyc. N. Y., viii, 1867, 183 (Greytown, Nicaragua); ix, 1868, 127 (Costa Rica); Bull. U. S. Nat. Mus., no. 4, 1876, 33 (Guichicovi, Oaxaca).—FRANTZIUS, Journ. für Orn., 1869, 317 (Costa Rica).—MERRILL, Bull. Nutt. Orn. Club, i, 1876, 88 (Ft. Brown, Texas).—BOUCARD, Proc. Zool. Soc. Lond., 1878, 71 (San José and Cartago, Costa Rica).—SUMICHRIST, La Naturaleza, v, 1881, 250 (Guichicovi).—BERLEPSCH, Journ. für Orn., 1887, 331 (Bogotá; synonymy).



- T[rochilus] aglaia* BOURCIER and Mulsant, Ann. Sci. Phys. et Nat. Lyon, ix, 1846, 329 (locality unknown); Rev. Zool., 1846, 316.
- Trochilus aglaia* Mulsant and Verreaux, Hist. Nat. Ois.-Mouch., i, livr. 4, 1874, 319.
- [*Chlorestes*. *γ. Saucerottia*] *aglaia* REICHENBACH, Aufz. der Colibr., 1854, 8.
- [*Chlorestes*] *aglaia* REICHENBACH, Troch. Enum., 1855, 4.
- H[emithylac] aglaiae* CABANIS and HEINE, Mus. Hein., iii, 1860, 38, footnote.
- [*Amazilius*] *aglaiae* BONAPARTE, Consp. Av., i, 1850, 78.
- P[olytmus] aglaia* GRAY, Gen. Birds, i, 1848, 109.
- [*Ariana riefferi*] var. *aglaiae* Mulsant, Ann. Soc. Linn. Lyon, n. s., xxii, 1876, 207.
- Ornismya amazili?* (not of Lesson) DELATTRE, Echo du Monde Savant, no. 45, 1843, col. 1069.
- Trochilus dubusi* BOURCIER, Ann. Sci. Phys. et Nat. Lyon, (2), iv, 1852, 141 (Honduras).
- [*Amazilia*] *dubusi* REICHENBACH, Aufz. der Colibr., 1854, 10; Troch. Enum., 1855, 8, pl. 778, figs. 4809, 4810.
- [*Amazilia*] *dubusi* SHARPE, Hand-list, ii, 1900, 108.
- [*Amazilius*] *dubusi* BONAPARTE, Rev. et Mag. de Zool., 1854, 254.
- Amazilius dubusi* SCLATER, Proc. Zool. Soc. Lond., 1856, 287 (Córdoba, Vera Cruz; crit.); 1859, 386 (Coapám, Oaxaca; Playa Vicente, Vera Cruz; crit.).
- P[yrrhophæna] dubusi* CABANIS and HEINE, Mus. Hein., iii, March, 1860, 36 (Veragua).
- Pyrhophæna dubusi* CABANIS, Journ. für Orn., 1862, 163 (Costa Rica; crit.).
- E[ranna] dubusi* HEINE, Journ. für Orn., 1863, 188 (Veragua to s. Mexico).
- [*Eranna*] *dubusi* HEINE and REICHENOW, Nom. Mus. Hein. Orn., 1890, 179 (Costa Rica; Veragua).
- A[mazilia] f[usca]udata dubusi* HARTERT, Novit. Zool., v, Dec. 31, 1898, 518 (Panamá northward).
- A[mazilia] fuscicaudata dubusi* HARTERT, Das Tierreich, Troch., 1900, 58.
- Amazilia tzacatl dubusi* BANGS, Bull. Mus. Comp. Zool., xxxix, July, 1903, 144 (Céiba and Yaruca, Honduras).
- Amizilis tzacatl dubusi* BANGS, Auk, xxiv, July, 1907, 295 (Boruca, Barranca, and Boca Barranca de Punta Arenas).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 528 (Costa Rica; habits; descr. nest and eggs).
- P[yrrhophæna] suavis* CABANIS and HEINE, Mus. Hein., iii, March, 1860, 36 (Cartagena, Colombia; coll. Berlin Mus.).
- E[ranna] suavis* HEINE, Journ. für Orn., 1863, 188.
- [*Polytmus*] *suavis* GRAY, Hand-list, i, 1869, 132, no. 1688.
- [*Ariana riefferi*] var. *suavis* Mulsant, Ann. Soc. Linn. Lyon, n. s., xxii, 1876, 206.
- A[mazilia] fuscicaudata (typica)* HARTERT, Das Tierreich, Troch., 1900, 58.

### AMIZILIS YUCATANENSIS YUCATANENSIS (Cabot).

#### YUCATAN HUMMING BIRD.

*Adults (sexes alike).*—Above metallic bronze-green or greenish bronze, duller and darker on pileum; the upper tail-coverts more or less tinged or intermixed with cinnamon-rufous, sometimes mostly of the latter color; middle pair of rectrices mostly or with at least terminal fourth metallic bronze, the basal portion chestnut; remaining rectrices chestnut, margined terminally with metallic bronze; remiges dusky, faintly glossed with violet; chin, throat, and chest bright metallic yellowish emerald green, the feathers pale buff basally or

(on chest) subterminally; under parts of body, including under tail- and wing-coverts and axillars, cinnamon-rufous; femoral tufts white; bill brownish (rosy reddish in life), dusky terminally; iris dark brown; feet dusky (in dried skins).

*Adult male*.—Length (skins), 88–102 (96); wing, 51–57.5 (53.8); tail, 31–35 (32.8); culmen, 19–21 (20.2).<sup>a</sup>

*Adult female*.—Length (skins), 94–100 (97); wing, 52–52.5 (52.2); tail, 32–34 (33); culmen, 21–21.5 (21.2).<sup>b</sup>

Extreme southeastern Mexico, in States of Tabasco (San Juan Bautista), Campeche (Canasayát), and Yucatan (Mérida; Labna; Chichen-Itza; Tabi), through British Honduras (forest near Manatee Lagoon) to eastern Guatemala (Santa Ana, Petén).

*Trochilus yucatanensis* CABOT, Proc. Bost. Soc. N. H., ii, 1845, 74 (Yucatan; coll. Dr. S. Cabot).

*Amazilia yucatanensis* GOULD, Mon. Troch., pt. xxiii, Sept., 1861 (vol. v), pl. 308.—MULSANT and VERREAUX, Classif. Troch., 1866, 35; Hist. Nat. Ois.-Mouch., i, livr. 4, 1874, 295; iv, livr. 3, 1878, 181.—DE OCA, La Naturaleza, iii, 1875, 303; Troq. de Mex., 1875, pl. (12), fig. 46.—ELLIOT, Classif. and Synop. Troch., 1879, 219, part.—RIDGWAY, Proc. U. S. Nat. Mus., i, 1879, 148, part (Yucatan); Rep. U. S. Nat. Mus., 1890 (1891), 364.—BOUCARD, Proc. Zool. Soc. Lond., 1883, 451 (Mérida, Yucatan); Gen. Hum. Birds, 1895, 196.—STONE, Proc. Ac. Nat. Sci. Phila., 1890, 207 (Labna, Yucatan).—SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 214 (Mérida, Yucatan; Santana, Peten, Guatemala).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 299.—CHAPMAN, Bull. Am. Mus. N. H., viii, 1896, 284 (Chichen-Itza, Yucatan).

[*Amazilia*] *yucatanensis* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 92.—MULSANT, Ann. Soc. Linn. Lyon, xxii, 1876, 206.—SHARPE, Hand-list, ii, 1900, 108.

A[*mazilia*] *yucatanensis* RIDGWAY, Proc. U. S. Nat. Mus., iv, 1881, 25 (diagnosis; crit.); Man. N. Am. Birds, 1887, 317; Rep. U. S. Nat. Mus., 1890 (1891), 364 (diagnosis, etc.).—HARTERT, Das Tierreich, Troch., 1900, 59 (monogr.).

*Pyrrhophæna yucatanensis* GOULD, Introd. Troch., oct. ed., 1861, 157.

E[ranna] *yucatanensis* HEINE, Journ. für Orn., 1863, 187.

*Amazilis yucatanensis* EUDES-DESLONGCHAMPS, Ann. Mus. Caen, i, 1880, 402.

*Amizilis yucatanensis* OBERHOLSER, Proc. Ac. Nat. Sci. Phila., 1899, 208.

[*Polytmus*] *yucatanensis* GRAY, Hand-list, i, 1869, 132, no. 1690.

*Pyrrhophæna cerviniventris* (not *Amazilia cerviniventris* Gould) SALVIN, Ibis, 1866, 195 (Santa Ana, Petén, Guatemala).

<sup>a</sup> Five specimens.

| Locality.                                                  | Wing. | Tall. | Ex-<br>posed<br>culmen. |
|------------------------------------------------------------|-------|-------|-------------------------|
| MALES.                                                     |       |       |                         |
| Three adult males from Tabasco, Campeche, and Yucatan..... | 55    | 34    | 20.8                    |
| Two adult males from British Honduras.....                 | 51.7  | 31    | 19.2                    |

<sup>b</sup> Two specimens, from Campeche and Yucatan.

## AMIZILIS YUCATANENSIS CERVINIVENTRIS (Gould).

## FAWN-BREADED HUMMING BIRD.

Similar to *A. y. yucatanensis*, but under parts of body, under tail-coverts, etc., paler cinnamon-rufous or nearly vinaceous-cinnamon (less pinkish, however, than the latter color) and sides glossed or spotted with metallic bronze-green or greenish bronze; slightly larger (except bill).

*Adult male*.—Length (skins), 98–104 (101); wing, 51.5–57 (55.2); tail, 30.5–37 (34.6); culmen, 20–21.5 (20.6).<sup>a</sup>

*Adult female*.—Length (skins), 91–104 (97); wing, 52–55 (53.4); tail, 31–34 (32.7); culmen, 20–21.5 (21).<sup>b</sup>

Southeastern Mexico, in States of southern Tamaulipas (Hidalgo; Tampico?; Alta Mira?; Presas de Aldama?; Tantina?), San Luís Potosí (Válles)?, Puebla (Metlaltoyuca), Vera Cruz (Córdova; Tospám, near Córdova; Tomatla; Sochiapa; Jalapa; San Andrés Tuxtla; Tlalcotalpám; Coatzacoalcos; Laguna; Catemaco; Misantla; Colipa; Vega de Casadero; Xochiapa), and Chiapas (Ocozucuantla)?

*Amazilius cerviniventris* GOULD, Proc. Zool. Soc. Lond., Nov. 11, 1856, 150 (Córdova, Vera Cruz; coll. J. Gould).—SCLATER, Proc. Zool. Soc. Lond., 1856, 287 (near Córdova).

*Amazilia cerviniventris* GOULD, Mon. Troch., pt. xiii, May, 1857 (vol. v, 1861), pl. 309.—SCLATER, Cat. Am. Birds, 1862, 314 (Tlalcotalpám, Vera Cruz).—MULSANT and VERREAUX, Classif. Troch., 1866, 35; Hist. Nat. Ois.-Mouch., i, livr. 4, 1874, 296; iv, livr. 3, 1878, 182.—D'OCA, La Naturaleza, iii, 1875, 209; Troq. de Mex., 1875, 51, pl. (11), fig. 39.—SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 214, part (except specimens from Brownsville, Texas).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 300 (except Texas specimens).—BOUCARD, Gen. Hum. Birds, 1895, 197 (Tospám, near Córdova, Vera Cruz).

[*Amazilia*] *cerviniventris* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 92.—MULSANT, Ann. Soc. Linn. Lyon, xxii, 1876, 209.—SHARPE, Hand-list, ii, 1900, 108.

*Pyrhophæna* *cerviniventris* CABANIS and HEINE, Mus. Hein., iii, 1860, 36, footnote (Córdova).

*Pyrhophæna cerviniventris* GOULD, Introd. Troch., oct. ed., 1861, 157.

*E[ranna] cerviniventris* HEINE, Journ. für Orn., 1863, 187 (Córdova).

[*Eranna*] *cerviniventris* HEINE and REICHENOW, Nom. Mus. Hein. Orn., 1890, 179 (s. Mexico).

[*Polytmus*] *cerviniventris* GRAY, Hand-list, i, 1869, 132, no. 1079.

*Amazilis cerviniventris* EUDES-DESLONGCHAMPS, Ann. Mus. Caen, i, 1880, 404.

*Amizilis cerviniventris* OBERHOLSER, Proc. Ac. Nat. Sci. Phila., June 2, 1899, 208.

*Amazilia cerviniventris cerviniventris* OBERHOLSER, Auk, xv, Jan., 1892, 36.

*Amizilis cerviniventris cerviniventris* AMERICAN ORNITHOLOGISTS' UNION, Check List, 3d ed., 1910, 205.

*Amalia cerviniventris* BOUCARD, Notes quelques Troch., 1873, 12 (Córdova).

*Amazilia yucatanensis* (not *Trochilus yucatanensis* Cabot) ELLIOT, Classif. and Synop. Troch., 1879, 219, part.—RIDGWAY, Proc. U. S. Nat. Mus., i, 1879, 148, part (Jalapa); iii, 1881, 187, 318, part (Jalapa).

*A[mazilia] cerviniventris (typica)* HARTERT, Das Tierreich, Troch., 1900, 59.

<sup>a</sup> Nine specimens.

<sup>b</sup> Five specimens.



## AMIZILIS YUCATANENSIS CHALCONOTA (Oberholser).

## BUFF-BELLIED HUMMING BIRD.

Similar to *A. y. cerviniventris*, but under parts of body much paler (light cinnamon buff to pale pinkish buff) and green of upper parts averaging more bronzy.

*Adult male*.—Length (skins), 95–105 (100); wing, 52.5–59 (55.8); tail, 32–37.5 (34); culmen, 20–21.5 (20.7).<sup>a</sup>

*Adult female*.—Length (skins), 91–101 (96); wing, 52.5–55.5 (53); tail, 30–35 (32.8); culmen, 20.5–22.5 (21.3).<sup>a</sup>

Lower Rio Grande Valley in Texas (Ft. Brown; Brownsville), and southward into States of Tamaulipas (Tampico; Alta Mira; Xicotencatl; Boque Negro; Victoria; Rio Corono; Sota La Marina; Matamoros; Santa Leonora; Rio de la Cruz) and Nuevo León (Saltillo; San Pedro Mines), northeastern Mexico.

*Amazilia cervineiventris* (not *Amazilia cerviniventris* Gould) MERRILL, Bull. Nutt. Orn. Club, ii, 1877, 26 (Ft. Brown, Texas).

*Amazilia cerviniventris* BREWER, Ibis, 1878, 116 (Ft. Brown; descr. nest).—COUES and SENNETT, Bull. U. S. Geol. and Geog. Surv. Terr., iv, no. i, 1878, 35 (Brownsville, Texas; descr.; habits).—ALLEN, Bull. Nutt. Orn. Club, v, 1880, 90 (Ft. Brown).—RIDGWAY, Nom. N. Am. Birds, 1881, no. 346; Proc. U. S. Nat. Mus., iii, 1881, 187, 318, part (Texas); iv, 1881, 25, part (crit.); Rep. U. S. Nat. Mus. for 1890 (1891), 364, part (monogr.; habits).—COUES, Check List, 2d ed., 1882, no. 420.—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886, no. 439.—SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 214, part (Brownsville; localities in Tamaulipas?).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 300, part (Rio Grande Valley; localities in Tamaulipas?).—BENDIRE, Life Hist. N. Am. Birds, ii, 1895, 225.

*A[mazilia] cerviniventris* RIDGWAY, Proc. U. S. Nat. Mus., iv, 1881, 25, 126 (diagnosis; crit.); Man. N. Am. Birds, 1887, 317, part.—COUES, Key N. Am. Birds, 2d ed., 1884, 466, part.

*Amazilia yucatanensis* (not *Trochilus yucatanensis* Cabot) RIDGWAY, Proc. U. S. Nat. Mus., i, 1879, 148, excl. syn. part (Ft. Brown, Texas; descr.); iii, 1880, 187, 219, 233; Nom. N. Am. Birds, 1881, no. 346.—MERRILL, Proc. U. S. Nat. Mus., i, 1879, 149 (Ft. Brown; habits).

*Amazilia cerviniventris chalconota* OBERHOLSER, Auk, xv, Jan., 1898, 32 ("Beeville"—Brownsville, Texas; coll. U. S. Nat. Mus.), 188 (correction of type locality).—AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Auk, xvi, 1899, 112.

*A[mazilia] cerviniventris chalconota* HARTERT, Das Tierreich, Troch., 1900, 59.

*[Amazilia] chalconota* SHARPE, Hand-list, ii, 1900, 108.

*Amizilis cerviniventris chalconota* OBERHOLSER, Proc. Ac. Nat. Sci. Phila., June 2, 1899, 208.—BAILEY (Florence M.), Handb. Birds W. U. S., 1902, 243.—AMERICAN ORNITHOLOGISTS' UNION, Check List, 3d, ed., 1910, 205.—PHILLIPS, Auk, xxviii, 1911, 77 (Alta Mira, Matamoros, Santa Leonora, and Rio de la Cruz, Tamaulipas).

<sup>a</sup> Ten specimens.

**AMIZILIS FORRERI** Boucard.**FORRER'S HUMMING BIRD.**

*Adult male*.—Above bright metallic golden green, duller or more brownish on pileum, the rump and upper tail-coverts chestnut; median rectrices purplish chestnut passing into reddish bronze terminally, the remaining rectrices purplish chestnut edged terminally or subterminally with reddish black, the outermost pair wholly purplish chestnut; throat and sides of neck metallic golden green; breast, abdomen, and anal region white; flanks pale rufous; under tail-coverts pale chestnut margined with white; remiges brown, more purplish on secondaries; maxilla black, mandible flesh color with black tip; length (skin), 200; wing, 54; tail, 38; culmen, 19.<sup>a</sup>

Western Mexico, in State of Sinaloa (Mazatlán).

*Amazilia forreri* BOUCARD, The Humming Bird, iii, no. 1, March, 1893, 7 (Mazatlán, Mexico; coll. A. Boucard); Gen. Hum. Birds, 1894, 193.

*A[mazilia] forreri* HARTERT, Das Tierreich, Troch., 1900, 63 (monogr.).

*[Amazilia] forreri* SHARPE, Hand-list, ii, 1900, 109.

**AMIZILIS RUTILA RUTILA** (Delattre).**CINNAMOMEOUS HUMMING BIRD.**

*Adults (sexes alike)*.—Above metallic bronze, varying from slightly greenish bronze to golden; upper tail-coverts metallic bronze mesially, broadly margined with light cinnamon-rufous or tawny-rufous, the shorter lateral coverts mostly of this color; tail deep cinnamon-rufous or rufous-chestnut, the rectrices broadly tipped with dark metallic bronze, the outer web of outermost rectrix edged for most of its length with the same; remiges dark brownish slate or dusky, faintly glossed with violaceous; under parts deep vinaceous-cinnamon or light dull cinnamon-rufous, slightly paler on chin and upper throat; femoral tufts and inconspicuous lumbar tufts white; bill pale brownish (carmine red or deep pinkish red in life) dusky at tip; iris dark brown; feet dusky.

*Adult male*.—Length (skins), 85–109 (99); wing, 52.5–60 (56.5); tail, 31–37 (34.6); culmen, 19.5–23.5 (21.2).<sup>b</sup>

<sup>a</sup> I have not seen this species, which seems to be very distinct. The above description is adapted from that by Boucard in "Genera of Humming Birds" (p. 193).

<sup>b</sup> Thirty-three specimens.

*Adult female*.—Length (skins), 90–109 (97); wing, 51–58 (55.3); tail, 31–37 (33.2); culmen, 20–23.5 (21.6).<sup>a</sup>

Western and southern Mexico, in States of Sinaloa (Mazatlán; Presidio de Mazatlán; Escuinapa; Plomosas; Arroyo de Limones), Colima (Manzanillo; Colima; Tacolapa; Culata), Guerrero (Papayo; Acapulco; Ometepec; El Limón; Dos Arroyos; Coquilla; Tierra Colorado; Rio Papagaio; Acahuitzotla; La Venta; Venta de Pelegrino; Alto de Camarón), Oaxaca (Chimalapa; Tapaná; Putla; Chicapa; Tehuantepec; Santa Efigénia), Chiapas (Tonalá), and Yucatan (Chichen-Itza; La Vega; Tunkas; Mérida; Tekanto; Sitilpech; Ticúl; between Ticúl and Uxmál; Mujeres I.; Holbox I.) and Territory of Tepic (Santiago; San Blas), and southward through central and eastern Guatemala (San Gerónimo; Gualán; Zacapa; El Rancho?), British Honduras (Belize; Orange Walk; Wild Cave Cay), Salvador (Acajutla; La Libertad?), Honduras (Tigre I.; Comayagua) and Nicaragua (Sucuyá; Matagalpa; San Gerónimo; Chinandega; Volcán de Chinandega; Volcan de Momotombo) to western Costa Rica (Volcán de Miravalles; Bagaces; Guanacaste; Bebedero; Punta Arenas; Barranca de Punta Arenas; Esparta; San Lucas; San Mateo; Santo Domingo de San Mateo; Tenorio; Bolsón).

*Ornismya cinnamomea* (not *Ornismya cinnamomeus* Gervais, 1835) LESSON, Rev. Zool., 1842, 175 (Acapulco, Guerrero).

<sup>a</sup> Seventeen specimens.

| Locality.                                                                                         | Wing. | Tail. | Ex-<br>posed<br>culmen. |
|---------------------------------------------------------------------------------------------------|-------|-------|-------------------------|
| MALES.                                                                                            |       |       |                         |
| Ten adult males from Sinaloa, Colima, Guerrero, and Oaxaca.....                                   | 56.6  | 34.5  | 21.9                    |
| Seven adult males from Yucatan.....                                                               | 56.1  | 34.3  | 20.4                    |
| Four adult males from eastern Guatemala (3) and Salvador (1).....                                 | 56.5  | 34.6  | 21.3                    |
| Two adult males from British Honduras.....                                                        | 57    | 36.2  | 20.2                    |
| Ten adult males from Costa Rica.....                                                              | 55.9  | 34.6  | 21.8                    |
| Seven adult males from western Chiapas (3) and Guatemala (4) ( <i>A. r. corallirostris</i> )..... | 56.5  | 34.4  | 21                      |
| Five adult males of <i>A. graysoni</i> from Tres Marias Islands.....                              | 68.1  | 43.5  | 25.1                    |
| FEMALES.                                                                                          |       |       |                         |
| Four adult females from Sinaloa, Colima, and Guerrero.....                                        | 55.1  | 34.4  | 23                      |
| Two adult females from Yucatan.....                                                               | 53.2  | 32.2  | 21.5                    |
| Eleven adult females from Costa Rica.....                                                         | 53    | 34    | 23                      |
| One adult female ( <i>A. r. corallirostris</i> ) from western Guatemala.....                      | 54.8  | 33    | 21.1                    |
| Four adult females of <i>A. graysoni</i> from Tres Marias Islands.....                            | 66.4  | 44    | 25.7                    |

I am not able to detect any differences of coloration according to geographic area except that specimens from Sinaloa, Colima, and Yucatan average slightly paler, those from Guerrero and Costa Rica slightly deeper in coloration, these latter approaching in intensity of coloration specimens of *A. r. corallirostris* from western Chiapas and western Guatemala.

<sup>b</sup> = *Sephanoides fernandensis* (King).



- Pyrrhophæna cinnamomea* GOULD, Introd. Troch., oct. ed., 1861, 156.—LAWRENCE, Ann. Lyc. N. Y., ix, 1869, 204 (Mérida, Yucatan); Mem. Bost. Soc. N. H., ii, 1874, 292 (Mazatlán, Sinaloa; habits); Bull. U. S. Nat. Mus. no. 4, 1876, 32 (Santa Efigénia, Oaxaca).—SANCHEZ, Anal. Mus. Nac. Mex., i, 1877, 96.—SUMICHRAST, La Naturaleza, v, 1881, 250 (Santa Efigénia and Tapana, Oaxaca; Potrero [Vera Cruz?]).
- Amazilia cinnamomea* SCLATER, Cat. Am. Birds, 1862, 314, part (in synonymy).—SALVIN, Ibis, 1870, 115 (Costa Rica); 1889, 365 (Holbox I., Yucatan); Cat. Birds Brit. Mus., xvi, 1892, 207, 660, part.—MULSANT and VERREAUX, Classif. Troch., 1866, 35, Hist. Nat. Ois.-Mouch., i, livr. 4, 1874, 284, part; iv, livr. 3, 1878, 180 (synonymy).—BOUCARD, List Ois. récol. Guat., 1878, 46; Proc. Zool. Soc. Lond., 1878, 71 (San Mateo and Punta Arenas, Costa Rica); 1883, 451 (Yucatan).—ELLIOT, Classif. and Synop. Troch., 1879, 219, part.—ZELEDÓN, Cat. Aves de Costa Rica, 1882, 21.—NUTTING, Proc. U. S. Nat. Mus., vi, 1883, 386 (Sucuyá, Nicaragua).—STONE, Proc. Ac. Nat. Sci. Phila., 1890, 207 (Tekanto, Sitilpech, and Ticúl, Yucatan).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 293, part.—HARTERT (E. and C.), Novit. Zool., i, 1895, 20 (Dos Arroyos, Guerrero).—CHAPMAN, Bull. Am. Mus., N. H., viii, 1896, 284 (Chichen-Itza, Yucata ).—UNDERWOOD, Ibis, 1896, 441 (Volcan de Miravalles and Bagaces, Costa Rica).—LANTZ, Trans. Kansas Ac. Sci. for 1896-97 (1899), 221 (Granada, "Mex."=Nicaragua?).—COLE, Bull. Mus. Comp. Zool., i, 1906, 128 (Chichen-Itza).
- A[mazilia] cinnamomea* MULSANT, Ann. Soc. Linn. Lyon, xxii, 1876, 206.—RIDGWAY, Man. N. Am. Birds, 1887, 318; Rep. U. S. Nat. Mus. for 1890 (1891), 364 (diagnosis, etc.).—HARTERT, Das Tierreich, Troch., 1900, 61.
- [Amazilia] cinnamomea* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 92, part.—SHARPE, Hand-list, ii, 1900, 109.
- Amazilis cinnamomea* EUDES-DESLONGCHAMPS, Ann. Mus. Caen, i, 1880, 400.
- Amazilis cinnamomeus* DEARBORN, Pub. 125, Field Mus. N. H., 1907, 98 (Gualán and El Rancho, Guatemala).
- Amazillia cinnamomea* SALVIN, Ibis, 1864, 380 (Half Moon Cay, Brit. Honduras).
- Amizilis cinnamomea* OBERHOLSER, Proc. Ac. Nat. Sci. Phila., June 2, 1899, 207.—CARRIKER, Ann. Carnegie Mus., vi, 1910, 530 (lowlands of n. w. Costa Rica).
- Amizilis cinnamomea cinnamomea* MILLER (W. De W.), Bull. Am. Mus. N. H., xxi, Nov. 24, 1905, 354 (Escuinapa, etc., Sinaloa).—BANGS, Auk, xxiv, 1907, 295 (Barranca de Punta Arenas, Costa Rica).
- A[mizilis] cinnamomea cinnamomea* RIDGWAY, Proc. Biol. Soc. Wash., xxiii, 1910, 54, in text.
- [Polytnus] cinnamomea* GRAY, Hand-list, i, 1869, 132, no. 1678.
- E[ranna] cinnamomea* HEINE, Journ. für Orn., 1863, 187.
- [Eranna] cinnamomea* HEINE and REICHENOW, Nom. Mus. Hein. Orn., 1890, 179 (Mexico).
- Ornismya rutila* DELATTRE, Echo du Monde Savant, sér. 2, vii, no. 45, June 15, 1843, col. 1069 (new name for *O. cinnamomea* Lesson, preoccupied).
- Amazilius corallirostris* (not *Trochilus corallirostris* Bourcier and Mulsant) SCLATER, Proc. Zool. Soc. Lond., 1858, 358 (Tigre I., Honduras); 1859, 386 (Oaxaca).
- Amazillia corallirostris* SCLATER and SALVIN, Ibis, 1859, 130, part (Tigre Island, Honduras; Guatemala, part; habits).—TAYLOR, Ibis, 1860, 115 (Tigre I., Comayagua, etc., Honduras; habits).
- [Amazilius] erythrorhynchus* BONAPARTE, Compt. Rend., xxx, 1850, 382.
- Amazilius haematorhynchus* BONAPARTE, Compt. Rend., xxx, 1850, 382.

**AMIZILIS RUTILA CORALLIROSTRIS (Bourcier and Mulsant).****CORAL-BILLED HUMMING BIRD.**

Similar to *A. r. rutila*, but much more deeply colored, the under parts deep cinnamon-rufous, the tail chestnut, and green or bronze of back, etc., deeper and brighter.

*Adult male*.—Length (skins), 91–105 (99); wing, 53–58.5 (55.9); tail, 31.5–37 (34.6); culmen, 20.5–22.5 (21.8).<sup>a</sup>

*Adult female*.—Length (skin), 103; wing, 53; tail, 34; culmen, 23.<sup>b</sup>  
Pacific slope of Guatemala (Escuintla; Escuinapa; Mazatenango; Patulúl; Retalhuleu; Santa Ana Mixtán) and Chiapas (Huehuetán).

*T[rochilus] corallirostris* BOURCIER and MULSANT, Ann. Sci. Phys. et Nat. Lyon, ix, 1846, 328 (Escuintla, w. Guatemala).

[*Amazilius*] *corallirostris* BONAPARTE, Consp. Av., i, 1850, 77; Rev. et Mag. de Zool., 1854, 254.

[*Amazilia*] *corallirostris* REICHENBACH, Aufz. der Colibr., 1854, 10; Troch. Enum., 1855, 8, pl. 776, figs. 4800, 4801.—GOULD, Mon. Troch., pt. xiii, May, 1857, (vol. v), pl. 307.

*Amazilia corallirostris* SALVIN, Ibis, 1860, 100 (Pacific slope Guatemala), 196, 268 (San Gerónimo, Guatemala; habits).

*Amazilia corallirostris* SCLATER and SALVIN, Ibis, 1859, 130, part (Guatemala; habits).

*P[yrhophæna] corallirostris* CABANIS and HEINE, Mus. Hein., iii, 1860, 35, footnote (Guatemala).

*Amazilia cinnamomea saturata* NELSON, Proc. Biol. Soc. Wash., xii, March 24, 1898, 63 (Huehuetán, Chiapas; coll. U. S. Nat. Mus.).

*Amizilis cinnamomea saturata* OBERHOLSER, Proc. Ac. Nat. Sci. Phila., June 2, 1899, 207.

*Amizilis cinnamomeus saturatus* DEARBORN, Pub. 125, Field Mus. N. H., 1907, 98 (San José, Mazatenango, and Patulúl, w. Guatemala; coast up to 2,000 ft.).

[*Amazilia*] *saturata* SHARPE, Hand-list, ii, 1900, 109.

*Amazilia cinnamomea* (not *Ornismya cinnamomea* Lesson, 1842, nor *O. cinnamomeus* Gervais, 1835) SCLATER, Cat. Am. Birds, 1862, 314, part (San Gerónimo, Guatemala).—ELLIOT, Classif. and Synop. Troch., 1879, 219, part.—SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 207, part (Escuintla, Santa Ana Mixtán, and Retalhuleu, Guatemala).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 293, part (San Gerónimo, Escuintla, Santa Ana Mixtán, and Retalhuleu, Guatemala).

[*Amazilia*] *cinnamomea* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 92, part.

**AMIZILIS GRAYSONI (Lawrence).****GRAYSON'S HUMMING BIRD.**

Similar in coloration to *A. rutila rutila*, but darker, throughout, and much larger.

*Adult male*.—Length (skins), 116–122 (120); wing, 66–69.5 (68.1); tail, 42–45.5 (43.5); culmen, 23.5–27 (25.1).<sup>c</sup>

<sup>a</sup> Seven specimens.

<sup>b</sup> One specimen.

<sup>c</sup> Five specimens.

*Adult female*.—Length (skins), 115–124 (120); wing, 66–67 (66.4); tail, 42.5–45.5 (44); culmen, 25–27 (25.7).<sup>a</sup>

Tres Marias Islands (Maria Madre Island), western Mexico.

*Amazilia (Pyrrhophæna) graysoni* LAWRENCE, Ann. Lyc. Nat. Hist. N. Y., viii, 1866, 404 (Tres Marias Islands, w. Mexico; coll. U. S. Nat. Mus.).

*Pyrrhophæna graysoni* LAWRENCE, Proc. Bost. Soc. N. H., xiv, 1871, 283; Mem. Bost. Soc. N. H., ii, 1874, 292.

*Amazilia graysoni* GOULD, Ibis, 1867, 247.—MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., i, livr. 4, 1874, 286; iv, livr. 3, 1878, 180.—ELLIOT, Classif. and Synop. Troch., 1879, 219.—D'HAMONVILLE, Bull. Soc. Zool. France, xi, 1886, 313 (reprint, p. 11; descr.; crit.).—SHARPE, in Gould's Mon. Troch., Suppl., 1887.—RIDGWAY, Rep. U. S. Nat. Mus., 1890 (1891), 364.—SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 209.—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 294.—BOUCARD, Gen. Hum. Birds, 1894, 195.—NELSON, North Am. Fauna, no. 14, 1899, 45 (habits; crit.).

[*Amazilia*] *graysoni* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 92.—MULSANT, Ann. Soc. Linn. Lyon, xxii, 1876, 206.—SHARPE, Hand-list, ii, 1900, 109.

A[*mazilia*] *graysoni* RIDGWAY, Man. N. Am. Birds, 1887, 318; Rep. U. S. Nat. Mus., 1890 (1891), 364 (diagnosis, etc.).—HARTERT, Das Tierreich, Troch., 1900, 61 (monogr.).

[*Eranna*] *graysoni* HEINE and REICHENOW, Nom. Mus. Hein. Orn., 1890, 179.

[*Polytmus*] *graysoni* GRAY, Hand-list, i, 1869, 132, no. 1689.

*Amazilis graysoni* EUDES-DESLONGCHAMPS, Ann. Mus. Caen, i, 1880, 402.—BAILEY (H. H.), Auk, xxiii, 1906, 388 (Cleofa Island, Tres Marias).

*Amizilis graysoni* OBERHOLSER, Proc. Acad. Nat. Sci. Phila., 1899, 207.

### AMIZILIS BANGSI Ridgway.

#### BANGS' HUMMING BIRD.

Similar to *A. rutila rutila*, but whole side of neck metallic greenish bronze instead of cinnamon-rufous.

*Adult male*.—Above bright metallic bronze-green, changing to greenish bronze, the pileum duller, inclining on forehead to dull coppery bronze; upper tail-coverts cinnamon-rufous, with a large median spot of metallic bronze; tail chestnut, the rectrices broadly margined terminally with metallic bronze; remiges dusky, faintly glossed with purplish; auricular region and whole side of neck metallic greenish bronze; chin and throat pale cinnamon-rufous, the feathers margined with pale cream-buffy; rest of under parts buffy vinaceous-cinnamon medially, deepening into cinnamon-rufous laterally; bill pale brownish (rosy red in life?); feet brownish (in dried skins); length (skin), 97; wing, 60; tail, 37; culmen, 22.<sup>b</sup>

Northwestern Costa Rica (Volcán de Miravalles).

*Amizilis bangsi* RIDGWAY, Proc. Biol. Soc. Wash., xxiii, April 19, 1910, 54 (Volcán de Miravalles, n. w. Costa Rica; coll. E. A. and O. Bangs).

<sup>a</sup> Four specimens.

<sup>b</sup> One specimen (the type).



## AMIZILIS VIRIDIFRONS (Elliot).

## GREEN-FRONTED HUMMING BIRD.

*Adult male.*<sup>a</sup>—Forehead and median portion of crown dark, slightly metallic, indigo blue; sides of crown, auricular region, occiput, and hindneck dusky metallic bronze-green, the upper back, scapulars, and wing-coverts rather brighter and more bronzy; lower back and rump grayish brown or olive, glossed with bronze; upper tail-coverts dull coppery bronze, narrowly margined with dull buffy whitish; tail metallic bronze, tinged with coppery bronze, the rectrices narrowly and indistinctly tipped with buffy; remiges dusky, faintly glossed with violet; suborbital region (anteriorly), rectal and malar regions, and under parts (including under tail-coverts), immaculate white, the sides partly grayish brown glossed with bronze; bill brownish (rosy red in life?), dusky terminally; iris dark brown; legs and feet dusky (in dried skins); length (skins), 99–103 (101); wing, 58–61.5 (60.1); tail, 31.5–35 (33.2); culmen, 22–24.5 (23.2).<sup>b</sup>

*Adult female.*—Similar to the adult male (as described above), but forehead and crown dull dusky green, and rectrices without buffy tip; length (skins), 96–106 (100); wing, 55–60.5 (58.5); tail, 30.5–35 (32.5); culmen, 20–24.5 (22.7).<sup>c</sup>

*Immature (?) male.*<sup>d</sup>—Exactly like the adult female in coloration.

*Young.*—Essentially like the adult female, but forehead and crown sooty, without trace of greenish or bluish gloss, and feathers of lower back, rump, and upper tail-coverts narrowly tipped or terminally margined with pale buffy grayish.

Southwestern Mexico, in States of Guerrero (Rincón; Tierra Colorado; Zumpango del Rio; Chilpancingo; Coquilla; Acahuitzotla; Sierra Madre del Sur), Oaxaca (Putla; Tehuántepec; Santa Efigénia; Tapana), and Chiapas (Tonalá).

*Cyanomyia viridifrons* ELLIOT, Ann. and Mag. N. H., ser. 4, viii, 1871, 266 (Putla, Oaxaca; coll. D. G. Elliot); Ibis, 1876, 314 (Putla; synonym.; crit.).—DE OCA, La Naturaleza, iii, 1875, 304.—SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 196 (Putla and Tehuántepec, Oaxaca; Rincón, Acahuitzotla, and Tierra Colorado,

<sup>a</sup> The only specimen examined corresponding in plumage to the fully adult male as described above is from Acahuitzotla, Guerrero, and represents the so-called *Cyanomyia guerrensis* Salvin and Godman. All others examined lack both the dark blue forehead and buffy tip to the rectrices. I am fully convinced, however, that these bluish fronted specimens are neither specifically nor subspecifically distinct from the greenish fronted ones, for the reason that the two occur in the same locality, both being represented from Acahuitzotla. Whether the apparently adult males with greenish forehead are in reality females wrongly sexed, are younger males, or merely represent individual variation can be determined only from more ample material.

<sup>b</sup> Three specimens.

<sup>c</sup> Six specimens.

<sup>d</sup> Possibly representing merely individual variation in the fully adult male.

- Guerrero; Tonalá, Chiapas).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 289 (Putla and Tehuántepec, Oaxaca; Tonalá, Chiapas).—BOUCARD, Gen. Hum. B. 1894, 164 (Putla).—HARTERT (E. and C.), Novit. Zool., i, 1894, 62 (Zumpango del Rio and Chilpancingo, Guerrero).
- Cyanomyia viridifrons* BOUCARD, Ann. Soc. Linn. Lyon, xx, 1874, 277 ("Puebla"=Putla?).
- Uranomitra viridifrons* ELLIOT, Classif. and Synop. Troch., 1879, 197.—SHARPE, in Gould's Mon. Troch., Suppl., 1885, pl. 49.—BERLEPSCH, Proc. U. S. Nat. Mus., xi, 1888, 562 (Sta. Efigénia, Oaxaca).
- [*Cyanomyia*] *viridifrons* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 91.
- Cyanomia viridifrons* D'OCA, Los Colibr. Mex., 1875, 58.
- Leucolia viridifrons* MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., i, livr. 3, 1874, 224 (Putla).
- Leucolia viridi-frons* MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., Suppl. plates (no date), pl. 27.
- [*Leucolia*] *viridifrons* MULSANT, Ann. Soc. Linn. Lyon, n. s., xxii, 1876, 204.
- A[mazilia] viridifrons* HARTERT, Das Tierreich, Troch., 1900, 62 (monogr.).
- [*Amazilia*] *viridifrons* SHARPE, Hand-list, ii, 1900, 109.
- [*Uranomitra*] *violiceps viridifrons* SIMON, Cat. Troch., 1897, 14.
- Cyanomyia guerrensis* SALVIN and GODMAN, Biol. Centr.-Am., ii, sig. 37, July, 1892, 290 (Rincón, Acahuitzotla, and Tierra Colorado, Sierra Madre del Sur, Guerrero, Mexico; coll. Salvin and Godman).—BOUCARD, Gen. Hum. Birds, 1894, 165 (Putla, Oaxaca).
- [*Uranomitra*] *guerrensis* SIMON, Cat. Troch., 1897, 14.
- A[mazilia] guerrensis* HARTERT, Das Tierreich, Troch., 1900, 63 (monogr.).
- [*Amazilia*] *guerrensis* SHARPE, Hand-list, ii, 1900, 109.

### AMIZILIS VERTICALIS (Lichtenstein).

#### BLACK-BILLED AZURE-CROWN.

*Adult male*.—Pileum bright metallic blue or violet-blue; hindneck, upper back, scapulars, and wing-coverts, dull bronze-green or olive glossed with bronze-green, the first usually more or less tinged or intermixed with blue on upper portion and along junction with white of foreneck; lower back, rump, and upper tail-coverts grayish brown or olive faintly glossed with bronze-greenish, the feathers sometimes narrowly and indistinctly paler on terminal margin, especially the upper tail-coverts, which are usually slightly more bronze-greenish; tail rather dull metallic greenish bronze; remiges dusky, faintly glossed with violet; rictal and malar regions and under parts (including under tail-coverts) immaculate white, the sides mostly light olive glossed with bronze-greenish; bill light brownish (rosy or carmine red in life?), dusky at tip; iris dark brown; feet dusky (in dried skins); length (skins), 98–105 (102); wing, 53–59.5 (57); tail, 29–32 (30.9); culmen, 21–23.5 (22.6).<sup>a</sup>

*Adult female*.—Similar to the adult male and not always distinguishable but usually with coloration slightly duller; length (skins), 98–104 (100); wing, 52–57 (54.9); tail, 27–31.5 (29.6); culmen, 21.5–24.5 (23.1).<sup>b</sup>

<sup>a</sup> Nine specimens.

<sup>b</sup> Six specimens.

*Young*.—Similar to adults, but feathers of upper parts (including pileum) narrowly tipped or terminally margined with buffy, these markings broadest on rump and upper tail-coverts, sometimes obsolete on back.

Western and central Mexico, in States of Sonora (Álamos), Sinaloa (Culiacán; Plomosas; Escuinapa; Mazatlán; Mount Juan Lisiarraga), Jalisco (Chapala; Lake Chapala; Bolaños; Sierra Bolaños; Etzatlán; Zapotlán; Barranca Ibarra), Michoacán (La Salada; Querendero; Los Reyes), Morelos (Cuernavaca), Aguas Calientes (Calvillo), Guanajuato, Mexico (Valley of Mexico; Choapán), and Puebla (Volcán de Orizaba), and Territory of Tepic (San Blas).

*Trochilus verticalis* LICHTENSTEIN, Preis-Verz. Mex. Vög., 1830, 1 (Mexico); Journ. für Orn., 1863, 55.

[*Cyanomyia*] *verticalis* BONAPARTE, Rev. et Mag. de Zool., 1854, 254.

*Cyanomyia verticalis* SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 194 (Mazatlán; San Blas; Zapotlán, Lake Chapala, Bolaños, and Sierra Bolaños, Jalisco; Calvillo, Aguas Calientes).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 287 (localities in Sinaloa, Jalisco, Guanajuato, Aguas Calientes, Mexico, and Puebla).

*Amazilia verticalis* HARTERT, Journ. für Orn., 1900, 360 (Volcán de Orizaba; crit.).

*A[mazilia] verticalis* HARTERT, Das Tierreich, Troch., 1900, 62.

[*Amazilia*] *verticalis* SHARPE, Hand-list, ii, 1900, 109.

*Ornismya cyanocephala* (not of Lesson, 1829) LESSON, Suppl. Ois.-Mouch., 1830, 132, pl. 17.

[*Agyrtia*] *cyanocephala* REICHENBACH, Troch. Enum., 1855, 7, pl. 760, figs. 4754, 4755.

[*Agyrtia*,  $\beta$ . *Uranomitra*] *quadricolor* (not *Trochilus quadricolor* Vieillot) REICHENBACH, Aufz. der Colibr., 1854, 10.

[*Agyrtia*] *quadricolor* REICHENBACH, Troch. Enum., 1855, 7, pl. 761, figs. 4758, 4759.

[*Cyanomyia*] *quadricolor* BONAPARTE, Rev. et Mag. de Zool., 1854, 254.

*Cyanomyia quadricolor* GOULD, Mon. Troch., pt. ix, 1855, (vol. v), pl. 284; Introd. Troch., oct. ed. 1861, 147.—SCLATER, Proc. Zool. Soc. Lond., 1856, 287; 1859, 386 (Choapán [Mexico?]); Cat. Am. Birds, 1862, 311.—VILLADA, La Naturaleza, ii, 1874, 362 (Valley of Mexico).—D'Oca, La Naturaleza, iii, 1875, 209 (Valley of Mexico); Troq. de Mex., 1875, 51, pl. (11), fig. 40.—LAWRENCE, Mem. Bost. Soc. N. H., ii, 1874, 292 (Mazatlán; Guadalajara).—ELLIOT, Ibis, 1876, 312 (synonymy; crit.).—HERRERA, La Naturaleza, (2), i, 1891, 322 (Valley of Mexico).

*Cyanomyia quadricolor* BOUCARD, Ann. Soc. Linn. Lyon, xx, 1874, 276 (Volcán de Orizaba [Puebla?]); Notes quelques Troch., 1873, 8 (Volcán de Orizaba; habits); Gen. Hum. Birds, 1894, 163.

*Cyanomyia quadricolor* DUGÈS, La Naturaleza, i, 1870, 141 (Guanajuato).

[*Cyanomyia*] *quadricolor* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 91.—SANCHEZ, Anal. Mus. Nac. Mex., i, 1877, 96 (Valley of Mexico; Jalisco; Mazatlán; Guanajuato).

[*Cyanomyia*] *quadricolor* MULSANT, Ann. Soc. Linn. Lyon, n. s., xxii, 1876, 204.

[*Uranomitra*] *quadricolor* CABANIS and HEINE, Mus. Hein., iii, 1860, 41.—HEINE, Journ. für Orn., 1863, 195.



*Uranomitra quadricolor* ELLIOT, Classif. and Synop. Troch., 1879, 196.—BERLEPSCH, Proc. U. S. Nat. Mus., xi, 1889, 561 (crit.).—LANTZ, Trans. Kansas Ac. Sci. for 1896-97 (1899), 221 (Culiacán, Sinaloa).

*Cyanomyia (Leucolia) quadricolor* MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., iv, livr. 3, 1878, 169 (crit.).

*Leucolia quadricolor* MULSANT and VERREAUX, Classif. Troch., 1866, 31; Hist. Nat. Ois.-Mouch., i, livr. 3, 1874, 215 (Orizaba).

[*Polytmus*] *quadricolor* GRAY, Hand-list, i, 1869, 133, no. 1710.

*U[ranomitra] ellioti* BERLEPSCH, Proc. U. S. Nat. Mus., xi, Sept. 25, 1889, 562, in text (Mazatlán, Sinaloa; coll. U. S. Nat. Mus.).

*Cyanomyia ellioti* JOUY, Proc. U. S. Nat. Mus., xvi, Apr. 18, 1894, 784 (Guadalaraja, Lake Chapala, and Barranca Ibarra, Jalisco).

### AMIZILIS VIOLICEPS (Gould).

#### VIOLET-CROWNED HUMMING BIRD.

*Adult male*.—Pileum bright metallic blue, violet-blue, or bluish violet; hindneck, upper back, scapulars, and wing-coverts dull metallic bronze-green, becoming brighter green or bronze-green next to white of foreneck, passing into olive glossed with bronze or bronze-green on lower back and rump, the feathers of which are indistinctly margined terminally with paler; upper tail-coverts bronzy olive to dull coppery bronze, margined terminally with dull whitish or pale dull grayish buffy; tail olive-bronze to coppery bronze, the rectrices margined with bronze; remiges dusky, faintly glossed with violet; suborbital, rictal, and malar regions and under parts (including under tail-coverts) immaculate white, the extreme outer portion of sides brownish gray or drab; bill pale brownish (rosy or carmine red in life), the tip dusky; iris dark brown; feet dusky; length (skins), 101-109 (104); wing, 56-60 (58.5); tail, 31-35 (33.4); culmen, 20.5-23.5 (21.6).<sup>a</sup>

*Adult female*.—Similar to the adult male and not always distinguishable, but usually slightly duller in coloration, especially the pileum, which is usually duller and less violaceous, sometimes partly greenish blue; length (skins), 100-107 (104); wing, 54.5-59.5 (57); tail, 31-33 (32.3); culmen, 21.5-23.5 (22.4).<sup>b</sup>

*Young*.—Essentially like adults, but pileum dusky or duller blue, the feathers tipped with rusty brown, feathers of rump tipped with buffy, upper tail-coverts margined with buffy, rectrices narrowly tipped with buffy or pale cinnamon, and sides suffused with buffy.

Southern Mexico, in States of Puebla (Atlixco), Morelos (Cuernavaca; Puente de Ixtla), Michoacán (La Salada), Guerrero (Chilpancingo; Acahuitzotla; Iguala; Venta de Zopilote; Sierra Madre del Sur), and Oaxaca (Putla; Oaxaca; Santa Efigénia; Tapana).

*Cyanomyia violiceps* GOULD, Ann. and Mag. N. H., 1859, iv, 97 (Atlixco, Puebla; coll. J. Gould); Mon. Troch., v, 1860, pl. 285; Introd. Troch., oct. ed., 1861, 147.—SCLATER, Proc. Zool. Soc. Lond., 1859, 386 (Atlixco).—D'Oca, La

<sup>a</sup> Sixteen specimens.

<sup>b</sup> Five specimens.

Naturaleza, iii, 1875, 208; Troq. de Mex., 1875, 50.—LAWRENCE, Bull. U. S. Nat. Mus., no. 4, 1876, 32 (Tapana and Sta. Efigénia, Oaxaca).—ELLIOT, Ibis, 1876, 313 (Oaxaca; synonym.; crit.).—SANCHEZ, An. Mus. Nac. Mex., i, 1877, 96 (Oaxaca).—SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 196 (Chilpancingo, Venta de Zopilote, and Sierra Madre del Sur, Guerrero; Atlixco, Puebla; Oaxaca).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 288.—JOUY, Proc. U. S. Nat. Mus., xvi, 1894, 784 (Cuernavaca, Morelos).—BOUCARD, Gen. Hum. Birds, 1894, 164 (Oaxaca).

[*Cyanomya*] *violiceps* Mulsant, Ann. Soc. Linn. Lyon, xxii, 1876, 204.

*Cyanomya violiceps* Boucard, Ann. Soc. Linn. Lyon, xx, 1874, 276 (Cuernavaca, Morelos; Atlixco, Puebla; Oaxaca; habits); Notes quelques Troch., 1873, 8 (Cuernavaca; Atlixco; Oaxaca; habits).—SUMICHRIST, La Naturaleza, v, 1881, 250 (Sta. Efigénia and Tapana).

[*Cyanomyia*] *violiceps* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 91.

*Cyanomyia violiceps* D'Oca, Los Colibris Mex., 1875, pl. 10, fig. 38.

*Cyanomya (Leucolia) violiceps* Mulsant and Verreaux, Hist. Nat. Ois.-Mouch., iv, livr. 3, 1878, 170 (crit.).

*Uranomyza violiceps* Cabanis and Heine, Mus. Hein., iii, 1860, 41, footnote (Oaxaca).

*Uranomyza violiceps* Elliot, Classif. and Synop. Troch., 1879, 196.

*Leucolia violiceps* Mulsant and Verreaux, Classif. Troch., 1866, 31; Hist. Nat. Ois.-Mouch., i, livr. 3, 1874, 213 (Puebla; Oaxaca; Morelos).

[*Polytmus*] *violiceps* Gray, Hand-list, i, 1869, 133, no. 1711.

[*Amazilia*] *violiceps* Hartert, Das Tierreich, Troch., 1900, 62 (monogr.).

[*Amazilia*] *violiceps* Sharpe, Hand-list, ii, 1900, 109.

## AMIZILIS CYANOCEPHALA CYANOCEPHALA (Lesson).

### RED-BILLED AZURE-CROWN.

*Adult male*.—Pileum bright metallic blue (varying from slightly violet blue to greenish blue); hindneck, back, scapulars, and wing-coverts metallic bronze-green, passing on rump, upper tail-coverts, and tail into olive faintly glossed with greenish bronze or bronze-green, the nape sometimes tinged with blue, the upper tail-coverts usually narrowly or indistinctly margined with paler; remiges dusky, faintly glossed with purplish; rictal and suborbital regions metallic bluish emerald-green, the feathers narrowly margined with white; auricular region and sides of neck mostly metallic bluish green, less bluish posteriorly; sides of chest metallic bronze-green, the feathers usually narrowly margined with white, passing into duller bronze-green or olive glossed with bronze-green or greenish bronze; chin, throat, malar region, median portion of chest and breast, abdomen, and femoral tufts immaculate white; under tail-coverts olive-gray, faintly glossed with bronze and margined with white; maxilla dull black; mandible whitish (carmine red in life), blackish at tip; iris dark brown; feet dusky or blackish; length (skins), 96–106 (101); wing, 57.5–62 (59.7); tail, 31–34.5 (33.2); culmen, 19–22 (20.3).<sup>a</sup>

*Adult female*.—Similar to the adult male and not always distinguishable, but usually with blue of pileum slightly less brilliant or

<sup>a</sup> Ten specimens.

more greenish, sometimes nearly bluish green; length (skins, 95–103 (100); wing, 54–61 (57.9); tail, 31.5–34 (32.6); culmen, 19.5–23 (21.2).<sup>a</sup>

*Young*.—Essentially like adults, but coloration much duller; pileum very dull greenish blue, the feathers margined, more or less distinctly, with light brownish; feathers of rump and upper tail-coverts narrowly but distinctly tipped or terminally margined with pale grayish buffy; rectrices narrowly margined at tip with whitish; under parts more or less suffused with buffy, especially on chin, throat, and sides.

Southeastern Mexico, in States of Vera Cruz (Córdoba; Coátepec; Orizaba; Miradór; Huatusco; Jalapa; Jico; Técholo), Oaxaca (Chimalapa; Guichicovi; Tehuántepec; mountains near Santo Domingo), and Chiapas (Gineta Mountains; Yajalón).

*Ornismya cyanocephalus* LESSON, Hist. Nat. Ois.-Mouch., 1829, p. xlv ("Brésil").  
*Ornismya cyanocephala* LESSON, Suppl. Ois.-Mouch., 1830–31, 132, pl. 17, 134, pl. 18 ("Brésil").

*Trochilus cyanocephalus* LESSON, Index Gen. et Synop. Troch., 1832, p. xxii, part.  
*Cyanomyia cyanocephala* BONAPARTE, Rev. et Mag. de Zool., 1854, 254.—GOULD, Mon. Troch., v, 1856, pl. 286; Introd. Troch., oct. ed., 1861, 147.—SCLATER, Proc. Zool. Soc. Lond., 1857, 212 (Orizaba, Vera Cruz); 1859, 367 (Jalapa, Vera Cruz).—D'Oca, Proc. Ac. Nat. Sci. Phila., 1868, 80 (habits); La Naturelleza, iii, 1875, 159 (Jalapa, Coátepec, and Córdoba, Vera Cruz); Troq. de Mex., 1875, 37, pl. (7), fig. 26.—LAWRENCE, Bull. U. S. Nat. Mus., no. 4, 1876, 32 (Guichicovi, Oaxaca).—ELLIOT, Ibis, 1876, 314, part (synon.; crit.).—MULSANT, Ann. Soc. Linn. Lyon, xxii, 1876, 204.—SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 197 (Jalapa, Coátepec, Orizaba, and Córdoba, Vera Cruz; Oaxaca and Chimalapa, Oaxaca).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 291 (Huatusco, etc., Vera Cruz; Gineta Mts., Chiapas; etc.).—BOUCARD, Gen. Hum. Birds, 1895, 163, part (Mexico).

[*Cyanomyia*] *cyanocephala* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 91, part (Mexico).—SANCHEZ, Anal. Mus. Nac. Mex., i, 1877, 96 (Jalapa, Córdoba, Orizaba).

[*Agyrtia*. *β*. *Uranomitra*] *cyanocephala* REICHENBACH, Aufz. der Colibr., 1854, 10.

[*Agyrtia*] *cyanocephala* REICHENBACH, Troch. Enum., 1855, 7.

*Leucolia cyanocephala* MULSANT and VERREAUX, Classif. Troch., 1866, 31; Hist. Nat. Ois.-Mouch., i, livr. 3, 1874, 219.

[*Polytmus*] *cyanocephalus* GRAY, Hand-list, i, 1869, 133, no. 1712.

*Uranomitra cyanocephala* ELLIOT, Classif. and Synop. Troch., 1879, 197.—FERRARI-PEREZ, Proc. U. S. Nat. Mus., ix, 1886, 158 (Jalapa).—CHAPMAN, Bull. Am. Mus. N. H., x, 1898, 33 (Jalapa).—LANTZ, Trans. Kansas Ac. Sci. for 1896–97 (1899), 221 (Coátepec).

[*Amazilia*] *cyanocephala* SHARPE, Hand-list, ii, 1900, 109.

*Cyanomyia cyanocephala* BOUCARD, Notes quelques Troch., 1873, 8 (Córdoba, Jalapa, and Orizaba, Vera Cruz); Ann. Soc. Linn. Lyon, xx, 1874, 276 (do.).—SUMICHRIST, La Naturelleza, v, 1881, 250 (Orizaba, Vera Cruz; Guichicovi, Oaxaca).

*Cyanomyia* (*Leucolia*) *cyanocephala* MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., iv, livr. 3, 1878, 170 (crit.).

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<sup>a</sup> Eight specimens.



- A[mazilia] cyanocephala (typica)* HARTERT, Das Tierreich, Troch., 1900, 61 (monogr.).
- P[olytmus] verticalis* (not *Trochilus verticalis* Lichtenstein) GRAY, Gen. Birds, i, Dec., 1848, 109.
- Aggyria faustinae* REICHENBACH, Troch. Enum., 1855, 7, pl. 760, figs. 4756, 4757.
- [*Uranomitra*] *faustinae* CABANIS and HEINE, Mus. Hein., iii, 1860, 180 (Jalapa).
- [*Cyanomyia cyanocephala*] var. *faustinae* MULSANT, Ann. Soc. Linn. Lyon, n. s., xxii, 1876, 204.
- U[ranomitra] lessoni* CABANIS and HEINE, Mus. Hein., iii, 1860, 41 (Jalapa, Vera Cruz; coll. Heine Mus.).—HEINE, Journ. für Orn., 1863, 195 (crit.).

### AMIZILIS CYANOCEPHALA GUATEMALENSIS (Gould).

#### GUATEMALAN AZURE-CROWN.

Similar to *A. c. cyanocephala*, but tail much brighter bronzy, the rump and upper tail-coverts also much more strongly glossed with bronzy.

*Adult male*.—Length (skins), 94–102 (98); wing, 57.5–63 (60.3); tail, 31–36.5 (33.9); culmen, 18.5–20 (19.4).<sup>a</sup>

*Adult female*.—Length (skins), 95–101 (98); wing, 53–63 (58.3); tail, 31–33.5 (32.3); culmen, 20–21.5 (20.5).<sup>b</sup>

Guatemala (pine ridge of Poctún; mountains of Chilasco; San Gerónimo, etc., Vera Paz; Dueñas; Cobán; Panajachál; Gualán; Toyabáj, Quitché; Guatemala City; Amatitlán), British Honduras (pine ridge near Manatee Lagoon; southern pine ridge, Western District), Honduras (Siquátepec; San Pedro Sula; Yaruca). and northern Nicaragua (Matagalpa).

*Cyanomyia cyanocephala* (not *Ornismyia cyanocephalus* Lesson) SCLATER and SALVIN, Ibis, 1859, 127 (Dueñas, Guatemala).—SALVIN and SCLATER, Ibis, 1860, 39 (Dueñas; habits).—SALVIN, Ibis, 1860, 195, 261, 264, 269 (Dueñas and Cobán, Guatemala).—TAYLOR, Ibis, 1860, 114 (Siquátepec, Honduras).—ELLIOT, Ibis, 1876, 314, part (Guatemala; Honduras; synonym.; crit.).—BOUCARD, Gen. Hum. Birds, 1895, 163, part (Guatemala).

[*Cyanomyia*] *cyanocephala* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 91, part. *Cyanomyia cyanocephala* BOUCARD, Liste Ois. récol. Guat., 1878, 46.

<sup>a</sup> Ten specimens.

<sup>b</sup> Four specimens.

| Locality.                                     | Wing. | Tail. | Ex-<br>posed<br>culmen. |
|-----------------------------------------------|-------|-------|-------------------------|
| MALES.                                        |       |       |                         |
| Eight adult males from Guatemala.....         | 60.7  | 34.2  | 19.6                    |
| Two adult males from British Honduras.....    | 58.5  | 32.7  | 18.7                    |
| FEMALES.                                      |       |       |                         |
| Two adult females from Guatemala.....         | 55.7  | 32    | 20                      |
| Two adult females from northern Honduras..... | 60    | 32.2  | 20.2                    |

- Uranomitra cyanocephala* ELLIOT, Classif. and Synop. Troch., 1879, 197, part.—RIDGWAY, Proc. U. S. Nat. Mus., xiv, 1891, 471 (San Pedro Sula, Honduras).  
*Amazilia cyanocephala* BANGS, Bull. Mus. Comp. Zool., xxxix, 1903, 144 (Yaruca, Honduras; crit.).  
*Cyanomyia guatemalensis* GOULD, Introd. Troch., oct. ed., 1861, 148 (Guatemala; coll. J. Gould).—SCLATER, Cat. Am. Birds, 1862, 312 (Cobán, Guatemala).—SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 198, 660 (southern pine ridge, Brit. Honduras; Poctún, Cobán, mts. of Chilasco, Panajachál, and Dueñas, Guatemala; Matagalpa, Nicaragua).—MULSANT, Ann. Soc. Linn. Lyon, xxii, 1876, 31.—LAWRENCE, Proc. Bost. Soc. N. H., xiv, 1871, 284 (Tres Marias Islands; error).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 291.  
*Cyanomia guatemalensis* LAWRENCE, Mem. Bost. Soc. N. H., ii, 1874, 292 ("Tres Marias;" error).  
*Cyanomyia guatemalensis* BOUCARD, Notes quelques Troch., 1873, 9 (Vera Paz, Guatemala); Anal. Soc. Linn. Lyon, xx, 1874, 277 (do.).  
[*Cyanomyia*] *guatemalensis* MULSANT, Ann. Soc. Linn. Lyon, n. s., xxii, 1876, 204.  
C[*yanomyia*] *guatemalensis* SALVIN, Ibis, 1866, 204.  
U[*ranomitra*] *guatemalensis* HEINE, Journ. für Orn., 1863, 195.  
*Uranomitra guatemalensis* BERLEPSCH, Proc. U. S. Nat. Mus., xi, 1888, 562 (as to alleged Tres Marias specimen).  
[*Uranomitra*] *cyanocephala guatemalensis* SIMON, Cat. Troch., 1897, 14.  
[*Polytmus*] *guatemalensis* GRAY, Hand-list, i, 1869, 133, no. 1714.  
A[*mazilia*] *cyanocephala guatemalensis* HARTERT, Das Tierreich, Troch., 1900, 62 (monogr.).  
[*Amazilia*] *guatemalensis* SHARPE, Hand-list, ii, 1900, 109.

### AMIZILIS MICRORHYNCHA (Elliot).

#### SMALL-BILLED AZURE-CROWN.

Similar to *A. cyanocephala guatemalensis*, but bill conspicuously smaller, and tail, as well as sides and under tail-coverts, more reddish bronze.

*Adult?* <sup>a</sup>—Pileum bright metallic blue, inclining, in places, to violet-blue and greenish blue; hindneck, upper back, sides of neck, and auricular region metallic bronze-green; wing-coverts, scapulars, and lower back rather dull metallic greenish bronze; rump and upper tail-coverts olive, faintly glossed with bronze, the feathers narrowly and indistinctly tipped with dull brownish buffy; tail metallic bronze, tinged with coppery bronze; remiges dusky, faintly glossed with purplish; malar region, chin, throat, most of chest, median line of breast, and abdomen, white; sides and flanks broccoli brown or drab glossed with coppery bronze; under tail-coverts pale dull coppery bronze margined with dull white; maxilla dull black, mandible pale brownish (reddish in life?) basally, dusky terminally; iris dark brown; feet brownish (in dried skin); length (skin), 88; wing, 58; tail, 28; culmen, 13.5.<sup>b</sup>

<sup>a</sup> The specimen described shows traces of immaturity.

<sup>b</sup> One specimen (type of the species).

## Honduras.

*Cyanomyia microrhyncha* ELLIOT, Ibis, 3d ser., vi, July, 1876, 316 (Honduras?; coll. D. G. Elliot).—SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 197.—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 290.—BOUCARD, Gen. Hum. Birds, 1894, 165.

*Uranomitra microrhyncha* ELLIOT, Classif. and Synop. Troch., 1879, 197.—SHARPE, in Gould's Mon. Troch., Suppl., 1885.

*Cyanomyia microrhyncha* MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., iv, livr. 3, 1878, 172; Suppl. plates, pl. 53.

*A[gyrtria] microrhyncha* HARTERT, Das Tierreich, Troch., 1900, 49.

*[Agyrtria] microrhyncha* SHARPE, Hand-list, ii, 1900, 106.

*[Agyrtria] microrrhyncha* SIMON, Cat. Troch., 1897, 11.

## AMIZILIS SALVINI (Brewster).

## SALVIN'S AZURE-CROWN.

*Adult male*.—Pileum bright metallic blue, more greenish posteriorly, the sides of head (behind and beneath eyes) and sides of neck also bright metallic blue; hindneck, upper back, anterior scapulars, and wing-coverts metallic bluish green; lower back, posterior scapulars, and rump dull grayish green, the feathers showing pale brownish gray margins in certain lights; upper tail-coverts and tail deeper metallic green, inclining to bottle green, with a faint bronzy cast, the outer pair of rectrices with a rather indistinct darker subterminal bar and more distinct broad brownish gray tip; remiges dusky, very faintly glossed with violet; chin, throat, chest (except laterally), median line of breast, abdomen, thighs, anal region, and under tail-coverts immaculate white; sides of throat and chest spotted with bright metallic blue, the terminal or subterminal portion of some of the feathers being of this color; sides of breast nearly uniform metallic bluish green (like hindneck), the sides and flanks purer green, the feathers with indistinct pale grayish or grayish white margins; lores dusky; maxilla blackish brown, paler (reddish in life) basally; mandible paler (reddish flesh color in life) with dusky tip; iris dark brown; length (skin), 91.5; wing, 53.8; tail, 33; culmen, 22.8.<sup>a</sup>

*Young female*.<sup>b</sup>—Pileum dull metallic smalt blue, passing into greenish blue or bluish green on hindneck and upper back, this into greenish bronze on lower back, rump, and upper tail-coverts, the feathers all margined terminally with pale buffy brown or brownish buff, these buffy margins becoming much broader and more conspicuous on rump and upper tail-coverts; wing-coverts deep grayish brown or brownish slate faintly glossed with greenish bronze and very narrowly tipped with paler; remiges similar but faintly glossed

<sup>a</sup> One specimen (the type: no. 24125, coll. William Brewster; Nacosari, Sonora, March 31, 1887; J. C. Cahoon).

<sup>b</sup> No. 13964, coll. Louis B. Bishop, Palmerlee, Cochise County, Arizona, July 4, 1905.



with purplish; rectrices greenish bronze, indistinctly tipped with pale buffy grayish and narrowly margined terminally with dull whitish; sides of head and neck dull metallic bluish, the feathers with narrow pale brownish buffy margins; under parts, including malar region, white, the sides of chest tinged with metallic greenish blue and spotted with pale olive, the median portion of under tail-coverts tinged with pale grayish or olive; maxilla dusky, more brownish basally; mandible whitish (in dried skin) with tip dusky; length (before skinning), 109; extent (before skinning), 139; wing, 54; tail, 30; exposed culmen, 21.5.

Northwestern Mexico, in State of Sonora (Nacosari) and southern Arizona (Palmerlee, Cochise County).

*Cyanomyia salvini* BREWSTER, Auk, x, No. 3, July, 1893, 214 (Nacosari, Sonora; coll. W. Brewster).

*Uranomitra salvini* BOUCARD, The Hum. Bird, v, part iv, Dec., 1895, 400 (Sonora).—BISHOP, Auk, xxiii, 1906, 337 (Palmerlee, Cochise Co., Arizona, 1 spec., July 4, 1905; descr. young female).—AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Auk, xxv, 1908, 348 (Arizona); Check List, 3d ed., 1910, 206.

*A[mazilia] salvini* HARTERT, Das Tierreich, Troch., 1900, 62 (monogr.).

[*Amazilia*] *salvini* SHARPE, Hand-list, ii, 1900, 109.

[*Agyrtria*] *salvini* SIMON, Cat. Troch., 1897, 11.

#### Genus AGYRTRIA Reichenbach.

*Agyrtria* REICHENBACH, Aufz. der Colibr., 1854, 10; Troch. Enum., 1855, 7. (Type, *Ornismya brevirostris* Lesson.)

*Leucodora* MULSANT, Hist. Nat. Ois.-Mouch., i, 1873, 309. (Type, *Trochilus norrisii* Bourcier.)

[*Agyrtria*]  $\beta$ . *Uranomitra* REICHENBACH, Journ. für Orn., 1853, extra-heft, 1854 (Aufz. der Colibr.), 10. (Type, *Trochilus franciæ* Bourcier and Mulsant.)

*Cyanomyia* BONAPARTE, Rev. et Mag. de Zool., vi, part 2, 1854, 254. (New name for *Uranomitra* Reichenbach.)

*Cyanomyia* (emendation) MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., iv, livr. 3, 1878, 169.

*Leucolia* MULSANT and VERREAUX, Mém. Soc. Imp. Sci. Nat. Cherb., xii, (sér. 2, tom. ii), 1866, 175; Hist. Nat. Ois.-Mouch., i, 1874, 211. (Type, ?)

Medium-sized to rather small Trochilidæ (length about 75–95 mm.) with straight, depressed bill longer than head, nasal operculum with outer and anterior half exposed, tail more or less emarginate, abdomen (sometimes whole of median under parts) white, and tail never black, steel blue, nor purplish bronze (usually olive-bronze, with subterminal portion darker).

Bill straight, decidedly broader than deep, slightly to moderately expanded basally, the exposed culmen slightly less than one-third to nearly one-half as long as wing, the interramal space narrow and relatively short; nasal operculum rather thin (not tumid), with rather less than anterior and outer halves exposed; wing normal (tenth primary decidedly longer than ninth and none of the pri-

maries attenuated or otherwise modified); tail slightly more than half to two-thirds as long as wing, shallowly to deeply emarginate, the lateral rectrices sometimes slightly narrowed terminally; tarsi feathered; outer toe nearly as long as middle toe, the inner decidedly shorter.

*Coloration*.—Above metallic green or bronze-green, the pileum usually darker and duller, but sometimes brilliant metallic green or blue; tail olive-bronzy, sometimes with an indistinct subterminal band of darker; under parts, except sides, varying from wholly white to almost entirely metallic green, but always with some white on abdomen. Sexes alike.

*Range*.—Southern Mexico to Peru, Bolivia, Brazil, and Cayenne. (About twenty-five species, mostly South American.)

#### KEY TO THE SPECIES OF AGYRTIA.

a. Under parts mostly white.

b. Pileum dull metallic green or bronze; maxilla pale with dusky tip; sides and flanks white slightly mixed on outer portion with metallic green; under tail-coverts white. (Southeastern Mexico to Costa Rica.)

*Agyrtia candida* (p. 432).

bb. Pileum brilliant metallic green (emerald green); mandible black or dusky; sides and flanks metallic green; under tail-coverts light brownish gray margined with white. (Trinidad and Venezuela.)

*Agyrtia chionopectus* (extralimital).<sup>a</sup>

aa. Under parts mostly metallic green.

b. Rectrices (except middle pair) bronze crossed by a subterminal band of dusky and tipped with grayish; throat and chest metallic bluish green changing to greenish blue. (Honduras?).....*Agyrtia luciae* (p. 434).

bb. Rectrices (except middle pair) mostly blackish; throat and chest metallic yellowish green. (Venezuela and Trinidad to lower Amazon Valley.)

*Agyrtia viridissima* (extralimital).<sup>b</sup>

<sup>a</sup> *Thaumatias chionopectus* Gould, Mon. Troch., v, Sept., 1859, pl. 293 (Trinidad).—*Polytmus chionopectus* Léotaud, Ois. Trinidad, 1866, 140.—*Leucolia chionopectus* Mulsant and Verreaux, Classif. Troch., 1866, 31.—*A[gyrtia] niveipectus* Cabanis and Heine, Mus. Hein., iii, 1860, 33, footnote (new name for *T. chionopectus*).—*Agyrtia niveipectus* Elliot, Classif. and Synop. Troch., 1879, 202; Salvin, Cat. Birds Brit. Mus., xvi, 1892, 180.—*A[gyrtia] chionopectus (typica)* Hartert, Das Tierreich, Troch., 1900, 42.—*Leucolia niveipectus* Mulsant and Verreaux, Hist. Nat. Ois.-Mouch., i, 1874, 227; iv, 1878, 173.

In the collection of the Museum of Comparative Zoology are four specimens of this species labeled "Grenada, W. I. Peter Gellineau." As these are of the well-known "make" of Trinidad "trade" skins, and the species has not been recorded from Grenada, I conclude that a wrong locality has been assigned the specimens in question.

<sup>b</sup> (?) *Trochilus maculatus* Vieillot, Ois. Dor., i, 1801, 87, 117, pl. 44; Nouv. Diet. d'Hist. Nat., vii, 1817, 361.—*Agyrtia maculata* Maynard, Birds E. Mass., 1870, 128 (Cambridge, Massachusetts).—*Ornismya viridissima* Lesson, Hist. Nat. Ois.-Mouch., 1829, pp. xxxiv, 207, pl. 75 ("Brésil").—*Trochilus viridissimus* Lesson, Ind. Gen. et Synop. Troch., 1832, p. xxvi.—(?) *Thaumatias viridissimus* Burmeister, Syst. Ueb. Th. Bras., ii, 1856, 344.—*Agyrtia viridissima* Salvin, Cat. Birds Brit. Mus., xvi, 1892, 186.—*A[gyrtia] viridissima* Hartert, Das Tierreich, Troch., 1900, 45.—[*Chlorestes*] *malvina* Reichenbach, Aufz. der Colibr., 1854, 7; Troch. Enum., 1855, 4, pl. 696, figs. 4550, 4551.—*A[gyrtia] malviniae* Cabanis and Heine, Mus. Hein., iii, 1860, 33, footnote.—[*Chlorestes*] *β. Saucerottia viridipectus* Reichenbach, Aufz. der Colibr., 1854,

## AGYRTRIA CANDIDA (Bourcier and Mulsant).

## WHITE-BELLIED EMERALD.

*Adult male*.—Above metallic bronze or bronze-green, the back usually more decidedly green or greenish; tail metallic bronze crossed (except on middle rectrices) by a broad subterminal band of dark purplish bronze or blackish glossed with purplish bronze, the terminal portion of two outer pairs of rectrices dull brownish gray; remiges dark brownish slate or dusky, faintly glossed with violaceous; under parts white, overlaid or spotted with metallic bronze-green, from malar region to flanks, inclusive, the under tail-coverts usually faintly tinged with pale brownish gray; maxilla dull black; mandible pale brownish (carmine or pink in life), with dusky tip; feet dusky; length (skins), 81–92 (86); wing, 49–52.5 (51.1); tail, 27.5–31 (28.9); culmen, 15–17.5 (16.1).<sup>a</sup>

*Adult female*.—Very similar to the adult male and probably not always distinguishable, but usually (?) with terminal portion of outer rectrices paler grayish;<sup>b</sup> length (skins), 80–91 (86); wing, 48.5–52 (49.9); tail, 27–30.5 (28.3); culmen, 16–19 (17.3).<sup>c</sup>

7; Troch. Enum., 1855, 4, 702, figs. 4573, 4574.—*Thaumatias linnæi* (not of Bonaparte, 1854) Gould, Mon. Troch., v, 1856, pl. 302; Introd. Troch., oct. ed., 1861, 153.—*Leucochloris linnæi* Mulsant and Verreaux, Classif. Troch., 1866, 32.—[*Polytmus*] *linnæi* Gray, Hand-list, i, 1869, 128, no. 1623.—[*Agyrtria*] *linnæi* Coues, Key N. Am. Birds, 1872, 186.—*Thaumatias tobaci* (not *Trochilus tobaci* Gmelin) Elliot, Ibis, 1878, 49.—*Agyrtria tobaci* Elliot, Classif. and Synop. Troch., 1879, 206; Ridgway, Rep. U. S. Nat. Mus. for 1890 (1891), 382.

This species has been recorded as a North American bird on account of its alleged accidental occurrence at Cambridge, Massachusetts; but the circumstances, as related, strongly indicate substitution (perhaps accidental), by the taxidermist, of a trade skin of this species for a specimen of the common *Archilochus colubris*.

<sup>a</sup> Twenty-three specimens.

<sup>b</sup> According to the material examined, the majority of adult females are absolutely similar in coloration to adult males.

<sup>c</sup> Twelve specimens.

| Locality.                                                 | Wing. | Tail. | Ex-<br>posed<br>culmen. |
|-----------------------------------------------------------|-------|-------|-------------------------|
| MALES.                                                    |       |       |                         |
| Four adult males from Vera Cruz (3) and Puebla (1).....   | 51.5  | 29.7  | 17                      |
| Four adult males from Yucatan.....                        | 50.4  | 27.9  | 15.7                    |
| One adult male from British Honduras.....                 | 50.5  | 28.5  | 15.5                    |
| Four adult males from Honduras.....                       | 51.2  | 28.2  | 16.1                    |
| Nine adult males from Guatemala.....                      | 51.3  | 29.5  | 15.9                    |
| One adult male from Costa Rica.....                       |       |       | 15.5                    |
| FEMALES.                                                  |       |       |                         |
| Five adult females from Vera Cruz (3) and Oaxaca (2)..... | 50.8  | 28.5  | 18                      |
| One adult female from Yucatan.....                        | 50    | 29    | 17                      |
| One adult female from British Honduras.....               | 50.5  | 28    | 17                      |
| Three adult females from Honduras.....                    | 49    | 27.8  | 17.3                    |
| One adult female from Guatemala.....                      | 48.5  | 29    | 16                      |
| One adult female from Costa Rica.....                     | 49    | 27.5  | 16                      |



*Young*.—Similar to adults, but feathers of pileum, rump, and upper tail-coverts narrowly and indistinctly tipped with brownish.

Southeastern Mexico, in States of Vera Cruz (Córdoba; Orizaba; Misantla; Xochiapa; Playa Vicente; Buena Vista; Pasa Nueva; Sochiapa), Oaxaca (Guichicovi; Chimalapa; mountains near Santo Domingo), Tabasco (Teapa), Chiapas (Palenque; Ocuilapa), Campeche (Canasayát), and Yucatan (Temáx; La Vega), and southward through Guatemala (Guatemala City; Cobán; Choctúm; Cobán to Chisé; Gualán; Los Amates, Yzabál), British Honduras (Belize; Corosál; Cayo; Southern Pine Ridge), Honduras (Truxillo; Santa Ana; San Pedro Sula; Potrerillos) and Nicaragua (Matagalpa; La Libertád and Santo Domingo, Chontales), to western Costa Rica (San Pedro del Moján; Coronado de Térraba).

*[Trochilus] candidus* BOURCIER and Mulsant, Ann. Soc. Phys. et Nat., ix, 1846, 326 (Cobán, Guatemala); Rev. Zool., 1846, 319.

*Polytmus candidus* GRAY, Gen. Birds, i, Dec., 1848, 108.

*[Polytmus] candidus* GRAY, Hand-list, i, 1869, 128, no. 1617.

*[Thaumantias] candidus* BONAPARTE, Cons. Av., i, 1850, 78.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 91.

*Thaumantias candidus* SCLATER, Proc. Zool. Soc. Lond., 1856, 287 (Mexico).—SCLATER and SALVIN, Ibis, 1859, 130 (Guatemala).—GOULD, Mon. Troch., v, 1860, pl. 292; Introd. Troch., oct. ed., 1861, 151.—TAYLOR, Ibis, 1860, 116 (Honduras).—D'OCA, La Naturaleza, iii, 1875, 206; Troq. de Mex., 1875, 48, pl. (10), fig. 36.—SUMICHRIST, La Naturaleza, v, 1881, 250 (Guichicovi, Oaxaca).—SANCHEZ, Anal. Mus. Nac. Mex., i, 1877, 96 (s. e. Mexico).—BOUCARD, Liste Ois. récol. Guat., 1878, 46.—LAWRENCE, Bull. U. S. Nat. Mus., iv, 1876, 33 (Guichicovi, Oaxaca).—ELLIOT, Ibis, 1878, 43 (Mexico to Honduras; crit.).

*[Thaumantias] candidus* BONAPARTE, Rev. et Mag. de Zool., 1854, 255.

*Thaumantias candidus* SCLATER, Proc. Zool. Soc. Lond., 1858, 358 (near Potrerillos, Honduras); 1859, 386 (Playa Vicente, Vera Cruz).—SALVIN and SCLATER, Ibis, 1860, 40 (Yzabál, e. Guatemala).—SALVIN, Ibis, 1859, 467 (Yzabál, e. Guatemala); 1860, 197, 270 (Cobán and Yzabál, Guatemala; habits); 1872, 313, 320 (Chontales, Nicaragua).

*Aglytrina candida* CABANIS and HEINE, Mus. Hein., iii, 1860, 33, footnote (Guatemala).—HEINE, Journ. für Orn., 1863, 183.—HARTERT, Das Tierreich, Troch., 1900, 46 (monogr.).

*Aglytrina candida* SCLATER, Cat. Am. Birds, 1862, 312 (Cobán, Guatemala).—ELLIOT, Classif. and Synop. Troch., 1879, 203.—ZELEDÓN, Cat. Aves de Costa Rica, 1882, 21; Anal. Mus. Nac. Costa Rica, i, 1887, 122 (Guatemala).—RIDGWAY, Rep. U. S. Nat. Mus. for 1890 (1891), 382.—SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 190, 660 (Misantla and Xochiapa, Vera Cruz; Chimalapa, Oaxaca; Temáx, Yucatan; Belize, Corosál, Cayo, and southern pine ridge, Brit. Honduras; Honduras; Cobán and Choctúm, Guatemala; Matagalpa, La Libertád, and Santo Domingo, Nicaragua).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 285 (Truxillo and Santa Ana, Honduras; Chontales, etc., Nicaragua, etc.).—LANTZ, Trans. Kans. Ac. Sci. for 1896-97 (1899), 221 (Cayo, Brit. Honduras).—DEARBORN, Pub. 125, Field Mus. N. H., 1907, 97 (Los Amates, e. Guatemala).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 523 (San Pedro del Moján, Costa Rica).

[*Agyrtria*] *candida* SHARPE, Hand-list, ii, 1900, 105.

*Leucollia candida* MULSANT and VERREAUX, Classif. Troch., 1866, 31; Hist. Nat. Ois.-Mouch., i, livr. 3, 1874, 233, pl. 21; iv, livr. 3, 1878, 174.—BOUCARD, Notes quelques Troch., 1873, 9 (Córdoba, Vera Cruz; Vera Paz, Guatemala; habits); Ann. Soc. Linn. Lyon, xx, 1874, 277 (do.).

*Leucollia candida* MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., Suppl., 1878?, pl. 54.

[*Leucolia*] *candida* MULSANT, Ann. Soc. Linn. Lyon, n. s., xxii, 1876, 205.

[*Agyrtria*] *margaritacea* (not *Trochilus margaritaceus* Gmelin) REICHENBACH, Troch. Enum., 1855, 7, pl. 758, figs. 4747, 4748.

(?) *Ornismyia senex* LESSON, Rev. Zool., 1838, 315 (=albino?, according to Elliot).

### AGYRTRIA LUCIÆ (Lawrence).

#### LUCY'S EMERALD.

*Adult (male?)*.—Above metallic bronze-green, much duller on pileum, purer green on rump; upper tail-coverts and tail greenish bronze, the rectrices (except middle pair) crossed by a broad subterminal band of dusky and tipped with bronzy grayish; remiges dusky, faintly glossed with purplish; chin, throat, and chest bright metallic bluish emerald green, changing to greenish blue, the feathers narrowly margined with whitish and with a subterminal bar of the same, the basal portion grayish; sides and flanks rather dull bronze-greenish; abdomen, anal region, and femoral tufts white; under tail-coverts light brownish gray centrally, broadly margined with dull white; maxilla dull black; mandible pale brownish (pinkish or reddish in life), dusky at tip; feet dusky (in dried skin); length (skin), 95; wing, 55; tail, 34; culmen, 22.

"Honduras."

*Thaumantias luciæ* LAWRENCE, Proc. Ac. Nat. Sci. Philad., 1867, 233 (Honduras; coll. Am. Mus. Nat. Hist.).—MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch. i, livr. 3, 1874, 241 (Honduras).—ELLIOT, Ibis, 1878, 52 (crit.).

[*Thaumantias*] *luciae* MULSANT, Ann. Soc. Linn. Lyon, n. s., xxii, 1876, 205.

[*Polytmus*] *luciæ* GRAY, Hand-list, i, 1869, 128, no. 1636.

*Agyrtria luciæ* ELLIOT, Classif. and Synop. Troch., 1879, 208.—RIDGWAY, Rep. U. S. Nat. Mus., 1890 (1891), 382.—SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 188.—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1896, 285.

*Agyrtria* (?) *luciae* BOUCARD, Gen. Hum. Birds, 1894, 153.

[*Agyrtria*] *luciae* HARTERT, Das Tierreich, Troch., 1900, 46 (monogr.).

[*Agyrtria*] *luciæ* SHARPE, Hand-list, ii, 1900, 105.

### Genus SAUCEROTTIA Bonaparte.

*Saucerottia* BONAPARTE, Consp. Av., i, 1849, 77; Compt. Rend., xxx, 1850, 381. (Type, *Trochilus saucerottii* Bourcier and Delattre.)

*Saucerottea* (emendation) SIMON, Cat. Troch., 1897, 12.—HARTERT, Das Tierreich, Troch., 1900, 51.

*Hemithylaca*<sup>a</sup> CABANIS and HEINE, Mus. Hein., iii, March, 1860, 37. (Type, *Trochilus nivcoenter* Gould.)

<sup>a</sup> "Von ἡμί (halb) und ὄλακος (Hose)." (Cabanis and Heine.)

- Hemistilbon*<sup>a</sup> GOULD, *Introd. Troch.*, oct. ed., 1861, 149. (Type, *Amazilia ocai* Gould.)
- Erythronota*<sup>b</sup> GOULD, *Introd. Troch.*, oct. ed., 1861, 160. (Type, *Ornismya erythronota* Lesson.)
- Eratina*<sup>c</sup> HEINE, *Journ. für Orn.*, xi, May, 1863, 190. (Type, *Trochilus iodurus* Saucerotte.)
- Eratopis*<sup>d</sup> HEINE, *Journ. für Orn.*, xi, May, 1863, 191. (Type, *Trochilus cyani-frons* Bourcier.)
- Erasmia*<sup>e</sup> HEINE, *Journ. für Orn.*, xi, May, 1863, 191. (Type, *Erythronota?* *elegans* Gould.)
- Ariana* MULSANT and VERREAUX, *Mém. Soc. Imp. Sci. Nat. Cherb.*, xii (sér. 2, ii), 1866, 180 (Classif. Troch., 1866, 35). (Type, *Trochilus niveoventer* Gould.)
- Lisoria* MULSANT, *Ann. Soc. Linn. Lyon*, n. s., xxii, 1876, 207 (Cat. Ois.-Mouch., 1876, 11). (Type, *Hemithylaca warszewiczi* Cabanis and Heine.)
- Leucodora* MULSANT, *Ann. Soc. Linn. Lyon*, n. s., xxii, 1876, 206. (Type, *Trochilus edward* Bourcier and Delattre.)—MULSANT and VERREAUX, *Hist. Nat. Ois.-Mouch.*, i, 1874, 309.

Medium-sized to rather small Trochilidæ (length about 85–95 mm.) closely related to *Amizilis* and *Agyrtria*, but differing (especially from the former) in narrower bill, scarcely widened at base, thinner (less tumid) and less exposed nasal operculi, and (usually) more deeply emarginate, black or dark steel blue (but sometimes bronzy) tail.

Bill slightly to decidedly longer than head, straight or very faintly decurved, rather slender, narrow (not conspicuously wider than deep), not noticeably widened basally; nasal operculi thin, with only outer and anterior halves exposed; wing normal; tail slightly to decidedly more than half as long as wing, more or less deeply emarginate, with outermost pair of rectrices usually longest, but sometimes shorter than next pair; tarsi feathered; outer toe about equal to middle toe, the inner toe slightly shorter, or lateral toes about equal and both slightly shorter than middle toe.

*Coloration*.—Above rather dark metallic green, the upper tail-coverts or rump (or both) sometimes coppery or reddish bronze, the pileum sometimes (in one species) dark metallic blue; tail usually dark steel blue or blackish, sometimes bronzy; under parts (except under tail-coverts) metallic green, the femoral tufts and leg feathers (sometimes whole abdomen) white. Sexes alike.

*Range*.—Mexico to Ecuador, Venezuela, Tobago, and Granada. (About twenty-two species.)

<sup>a</sup> 'Ημι, semi, et στίβων, micans. (Gould.)

<sup>b</sup> 'Ερυθρός, ruber, et νῶτος, dorsum. (Gould.)

<sup>c</sup> ἑρατεινος. (Heine.)

<sup>d</sup> "Ερατώπις (lieblichen Blick's)." (Heine.)

<sup>e</sup> "Von ἐράσμιος lieblich, anmathig, angenehm." (Heine.)



## KEY TO THE SPECIES AND SUBSPECIES OF SAUCEROTTIA.

a. Remiges wholly blackish.

b. Abdomen not white.

c. Tail blue-black or dark steel blue.

d. Pileum dark metallic blue. (Colombia.)

**Saucerottia cyanifrons** (extralimital).<sup>a</sup>

dd. Pileum metallic green or green and bronze (more or less bright).

e. Under tail-coverts dark metallic blue, or dusky grayish glossed with blue, margined with pale grayish.

f. Smaller (wing 50–56.5, tail 29–32.5, culmen 18–20.5); bill straighter; green of upper parts less bluish. (*Saucerottia sophiæ*.)

g. Rump more bronzy, passing into coppery or purplish bronze posteriorly. (Costa Rica and Nicaragua.)

**Saucerottia sophiæ sophiæ** (p. 439).

gg. Rump wholly green.

h. Under tail-coverts dusky grayish glossed with blue. (North-western Colombia.)

**Saucerottia sophiæ saucerrottei** (extralimital).<sup>b</sup>

hh. Under tail-coverts dark steel blue centrally.

i. Coloration darker green (both above and below); wing averaging shorter. (Eastern Colombia.)

**Saucerottia sophiæ warszewiczi** (extralimital).<sup>c</sup>

<sup>a</sup> *T[rochilus] cyanifrons* Bourcier, Rev. Zool., vi, April, 1843, 100 (Ybagué, Colombia); Bourcier and Mulsant, Ann. Sci. Phys. et Nat. d'Agric., etc., Lyon, vi, 1843, 42.—[*Thalurania*] *cyanifrons* Bonaparte, Consp. Av., i, 1850, 77.—[*Chlorestes*, *r. Saucerottia*] *cyanifrons* Reichenbach, Aufz. der Colibr., 1854, 8.—*Saucerottia cyanifrons* Bonaparte, Rev. et Mag. de Zool., 1854, 255; Gould, Mon. Troch., v, 1866, pl. 323.—*S[aucerottea] cyanifrons* Hartert, Das Tierreich, Troch., 1900, 52 (monogr.).—*Chlorestes cyanifrons* Reichenbach, Troch. Enum., 1855, 4, pl. 701, figs. 4571, 4572.—*H[emithylaca] cyanifrons* Cabanis and Heine, Mus. Hein., iii, 1860, 39 ("Veragua").—*Eratopis cyanifrons* Heine, Journ. für Orn., 1863, 191, in text.—*Ariana cyanifrons* Mulsant and Verreaux, Classif. Troch., 1866, 36; Hist. Nat. Ois.-Mouch., i, 1874, 332; iv, 1877, 185.—[*Polytmus*] *cyanifrons* Gray, Hand-list, i, 1869, 131, no. 1669.—*Amazilia cyanifrons* Elliot, Classif. and Synop. Troch., 1879, 225; Salvin, Cat. Birds Brit. Mus., xvi, 1892, 227.—*Pyrrhophæna cyaneifrons* Berlepsch, Journ. für Orn., 1887, 332.

<sup>b</sup> *T[rochilus] saucerrottei* Delattre and Bourcier, Rev. Zool., ix, Sept. (=Nov.), 1846, 311 (Cali, n. w. Colombia; coll. Delattre).—*H[emithylaca] saucerrottei* Cabanis and Heine, Mus. Hein., iii, 1860, 38, footnote.—*Ariana saucerrottei* Mulsant and Verreaux, Classif. Troch., 1866, 36; Hist. Nat. Ois.-Mouch., i, 1874, index; iv, 1877, 185.—*Amazilia saucerrottii* Elliot, Classif. and Synop. Troch., 1879, 225; Salvin, Cat. Birds Brit. Mus., xvi, 1892, 223.—*Saucerottia saucerrottii* Eudes-Deslongchamps, Ann. Mus. Caen, i, 1880, 424.—*Pyrrhophæna saucerrottei* Berlepsch, Journ. für Orn., 1887, 332.—*Saucerottia typica* Bonaparte, Consp. Av., i, 1850, 77; Gould, Introd. Troch., 1861, 162.—*Chlorestes typica* Reichenbach, Troch. Enum., 1855, 4, pl. 701, figs. 4569, 4570.—*Erythronota typica* Gould, Mon. Troch., v, 1861, pl. 321.—*Erythronota saucerrottei* Mulsant and Verreaux, Hist. Nat. Ois.-Mouch., i, 1874, 331.

<sup>c</sup> *H[emithylaca] warszewiczi* Cabanis and Heine, Mus. Hein., iii, March, 1860, 38 ("Veragua," coll. Heine Mus.).—*Saucerottia warszewiczi* Gould, Introd. Troch., 1861, 163.—*Ariana warszewiczi* Mulsant and Verreaux, Hist. Nat. Ois.-Mouch., i, 1874, 327; iv, 1877, 185.—[*Polytmus*] *warszewiczi* Gray, Hand-list, i, 1869, 131, no. 1671.—*Amazilia warszewiczi* Elliot, Classif. and Synop. Troch., 1879, 225.—*Amazilia warszewiczi* Salvin, Cat. Birds Brit. Mus., xvi, 1892, 222, part.—*Amizilis warszewiczi* Oberholser, Proc. Ac. Nat. Sci. Phila., 1899, 208.—*S[aucerottea] warszewiczi (typica)* Hartert, Das Tierreich, Troch., 1900, 52.

- ii. Coloration lighter (more yellowish) green; wing averaging longer. (Andes of Venezuela.)

*Saucerottia sophiæ braccata* (extralimital).<sup>a</sup>

- ff. Larger (wing 56, tail 43.3, culmen 25.4); bill more curved; green of upper parts more bluish. (Northwestern Costa Rica.)

*Saucerottia alfaroana* (p. 441).

- ee. Under tail-coverts bronzy or chestnut. (*Saucerottia tobaci*.)

- f. Tail black or dull violet-black.

- g. Above mostly green or bronze-green, the upper tail-coverts purplish bronze; larger: male with wing 55.5, tail 33, culmen 19; female, wing 54–54.5 (54.2), tail 32–32.5 (32.2), culmen 18–19.5 (18.8). (Island of Tobago.).....*Saucerottia tobaci tobaci* (extralimital).<sup>b</sup>

- gg. Above with whole rump coppery bronze, the upper tail-coverts sometimes light chestnut; smaller: male with wing 50–51 (50.3), tail 30–30.5 (30.2), culmen 16.5–18 (17.2); female, wing 48–50 (49.3), tail 29–30 (29.3), culmen 18–19.5 (18.8). (Island of Trinidad.).....*Saucerottia tobaci erythronota* (extralimital).<sup>c</sup>

- ff. Tail bright blue-black or dark steel blue.

- g. Wing-coverts, back, and rump green or bronze-green; under tail-coverts usually bronze centrally; smaller: male with wing 49–51 (50.2), tail 29–31 (29.7), culmen 17–18 (17.7); female, wing 48–49 (48.8), tail 28–29 (28.4), culmen 18–19 (18.4). (Coast district of Venezuela.).....*Saucerottia tobaci feliciæ* (extralimital).<sup>d</sup>

<sup>a</sup> *H[emithylaca] braccata* Heine, Journ. für Orn., May, 1863, 193 (Mérida, Venezuela; coll. Berlin Mus.).—*H[emithylaca] caligata* (not *Trochilus caligatus* Gould) Cabanis and Heine, Mus. Hein., iii, 1860, 39 (Mérida, Venezuela).—*S[aucerottea] warscewiczii braccata* Hartert, Das Tierreich, Troch., 1900, 52 (monogr.).

<sup>b</sup> (?) [*Trochilus*] *tobaci* Gmelin, Syst. Nat., i, pt. 1, 1788, 498 (based on *Tobago Humming-bird* Latham, Synopsis, i, pt. 2, 781; Tobago).—*Amazilia tobaci* Salvin, Cat. Birds Brit. Mus., xvi, 1892, 226.—*Trochilus erythronotus* (not *Ornismya erythronotos* Lesson) Jardine, Ann. and Mag. N. H., xx, 1847, 374 (Tobago).—*Saucerottia wellsii* Boucard, The Hum. Bird, iii, pt. i, March, 1893, 8 ("Grenada;" coll. A. Boucard); Dalmás, Bull. Soc. Zool. France, xiii, 1900, 142 (Tobago; crit.).—*S[aucerottea] tobaci (typica)* Hartert, Das Tierreich, Troch., 1900, 55.—*Amizilis tobaci* Oberholser, Proc. Ac. Nat. Sci. Phila., 1899, 208.

<sup>c</sup> *Ornismya erythronotos* Lesson, Hist. Nat. Ois.-Mouch., 1829, pp. xxxii, 181, pl. 61 ("Brésil").—*P[olytmus] erythronotus* Gray, Gen. Birds, i, 1848, 108.—*Polytmus] erythronotos* Gray, Hand-list, i, 1869, 132, no. 1695.—*Polytmus erythronotus* Léotaud, Ois. Trinidad, 1866, 137.—*[Saucerottia] erythronota* Bonaparte, Consp. Av., i, 1850, 77.—*Chlorestes erythronota* Reichenbach, Troch. Enum., 1855, 4, pl. 699, figs. 4562, 4563.—*H[emithylaca] erythronota* Cabanis and Heine, Mus. Hein., iii, 1860, 37.—*Ariana erythronota* Mulsant and Verreaux, Classif. Troch., 1866, 36; Hist. Nat. Ois.-Mouch., i, 1874, 323.—*Amazilia erythronota* Elliot, Classif. and Synop. Troch., 1879, 224; Salvin, Cat. Birds Brit. Mus., xvi, 1892, 225.—*Amizilis tobaci erythronota* Oberholser, Proc. Ac. Nat. Sci. Phila., June 2, 1899, 208.—*S[aucerottea] tobaci erythronota* Hartert, Das Tierreich, Troch., 1900, 55 (monogr.).—*Erythronota antiqua* Gould, Mon. Troch., v, May, 1860, pl. 316; Introd. Troch., oct. ed., 1861, 160.

<sup>d</sup> *[Ornismya] feliciæ* Lesson, Rev. Zool., iii, March, 1840, 72 ("le Brésil, le district de San José;" coll. Abeillé).—*[Chlorestes, γ. Saucerottia] feliciæ* Reichenbach, Aufz. der Colibr., 1854, 7.—*[Saucerottia] feliciæ* Bonaparte, Rev. et Mag. de Zool., 1854, 255.—*Chlorestes feliciæ* Reichenbach, Troch. Enum., 1855, 4, pl. 697, figs. 4556, 4557.—*Erythronota feliciæ* Gould, Mon. Troch., v, Sept., 1849, pl. 317; Introd. Troch., oct. ed., 1861, 161.—*H[emithylaca] feliciæ* Cabanis and Heine, Mus. Hein., iii, 1860, 38.—*Ariana feliciæ* Mulsant and Verreaux, Classif. Troch., 1866, 36; Hist. Nat. Ois.-Mouch., i, 1874, 325; iv, 1877, 185.—*[Polytmus] feliciæ* Gray, Hand-list, i, 1869, 132, no. 1696.—

- gg. Wing-coverts and back bright coppery bronze; rump and upper tail-coverts chestnut; under tail-coverts chestnut; larger: male with wing 53, tail 29.5, culmen 20; female, wing 50–51.5 (50.8), tail 29.5–31 (30.2), culmen 20.5–21.5 (20.8). (Margarita Island, Leeward group.)..... *Saucerottia tobaci aliciae* (extralimital).<sup>a</sup>
- cc. Tail not blue-black or dark steel blue.
- d. Upper tail-coverts and rectrices chestnut basally; under tail-coverts chestnut. (British Guiana.)..... *Saucerottia cupreicauda* (extralimital).<sup>b</sup>
- dd. Upper tail-coverts and tail without chestnut; under tail-coverts not chestnut.
- e. Tail dark metallic violet, more purplish basally, more bluish terminally. (Central Colombia.)..... *Saucerottia viridigaster* (extralimital).<sup>c</sup>
- ee. Tail bright metallic purplish bronze. (Central Colombia.)

*Saucerottia iodura?* (extralimital).<sup>d</sup>

*Amazilia feliciae* Elliot, Classif. and Synop. Troch., 1879, 234; Salvin, Cat. Birds Brit. Mus., xvi, 1892, 226.—*Amizilis tobaci feliciae* Oberholser, Proc. Ac. Nat. Sci. Phila., June 2, 1899, 208.—*S[aucerottea] tobaci feliciae* Hartert, Das Tierreich, Troch., 1900, 55 (monogr.).—*Ornismya feliciana* Lesson, Rev. Zool., vii, Dec., 1844, 433 ("Guayaquil;" coll. Abeillé).

<sup>a</sup> *Amazilia aliciae* Richmond, Auk, xii, Oct., 1895, 368 (Margarita Island, Venezuela; coll. U. S. Nat. Mus.).—*Amizilis tobaci aliciae* Oberholser, Proc. Ac. Nat. Sci. Phila., June 2, 1899, 208.—*S[aucerottea] tobaci aliciae* Hartert, Das Tierreich, Troch., 1900, 55.

<sup>b</sup> *Amazilia cupreicauda* Salvin and Godman, Ibis, Oct., 1884, 452 (Roraima, Brit. Guiana; coll. Salvin and Godman); Salvin, Cat. Birds Brit. Mus., xvi, 1892, 220; Sharpe, Suppl. Gould's Mon. Troch., 1887, pl. 56.—*S[aucerottea] cupreicauda* Hartert, Das Tierreich, Troch., 1900, 54 (monogr.).

<sup>c</sup> *T[rochilus] viridigaster* Bourcier, Rev. Zool., vi, April, 1843, 103 (Fusagasugá, Colombia); Bourcier and Mulsant, Ann. Sci. Phys. et Nat., etc., Lyon, vi, 1843, 42.—*H[ylocharis] viridigaster* Gray, Gen. Birds, i, 1848, 115.—*Saucerottia viridigaster* Bonaparte, Rev. et Mag. de Zool., 1854, 255.—*Amazilia viridigaster* Gould, Mon. Troch., v, 1860, pl. 314.—*Pyrrhophæna viridigaster* Gould, Introd. Troch., oct. ed., 1861, 159.—*Ariana viridigaster* Mulsant and Verreaux, Classif. Troch., 1866, 36; Hist. Nat. Ois.-Mouch., i, 1874, 320; iv, 1877, 185.—*[Polytmus] viridigaster* Gray, Handlist, i, 1869, 132, no. 1683.—*[Chlorestes] r. Saucerottia viridiventr* Reichenbach, Aufz. der Colibr., 1854, 8.—*Chlorestes viridiventr* Reichenbach, Troch. Enum., 1855, 4, pl. 699, figs. 4564, 4565.—*H[emithylaca] viridiventr* Cabanis and Heine, Mus. Hein., iii, 1860, 38.—*Amazilia viridiventr* Sclater, Cat. Am. Birds, 1862, 315; Elliot, Classif. and Synop. Troch., 1879, 220; Salvin, Cat. Birds Brit. Mus., xvi, 1892, 219, part.—*E[ratina] viridiventr* Heine, Journ. für Orn., 1863, 191.—*Pyrrhophæna viridiventr* Berlepsch, Journ. für Orn., 1887, 332.—*S[aucerottea] viridigaster* Hartert, Das Tierreich, Troch., 1900, 53 (monogr.).—*Saucerottia nunezi* Boucard, The Hum. Bird, ii, 1892, 81 (melanistic variety).

<sup>d</sup> ?*[Chlorestes] r. Saucerottia iodura* ("Tr[ochilus iodurus] Sauc[erotte] 1843") Reichenbach, Aufz. der Colibr., 1854, 8 (Colombia; nomen nudum!).—?*[Chlorestes] iodura* Reichenbach, Troch. Enum., 1855, 4, pl. 698, figs. 4560, 4561.—?*H[emithylaca] iodura* Cabanis and Heine, Mus. Hein., iii, 1860, 39.—?*Pyrrhophæna iodura* Gould, Introd. Troch., oct. ed., 1861, 159; Mulsant and Verreaux, Hist. Nat. Ois.-Mouch., i, 1874, 299.—*E[ratina] iodura* Heine, Journ. für Orn., 1863, 190.—*Amazilia iodura* Elliot, Classif. and Synop. Troch., 1879, 223; Sharpe, Suppl. Gould's Mon. Troch., 1887; Salvin, Cat. Birds Brit. Mus., xvi, 1892, 219.

While doubtful whether the bird whose characters are given above is the true *S. iodura*, which, judging from the colored figures on which the name is based and descriptions by authors, seems more like *S. viridigaster*, I nevertheless feel sure that it can not represent an extreme variation of the latter, being much too different in coloration of the tail. I have seen but one specimen, a "Bogota" skin, in the collection of the U. S. National Museum.



- bb.* Abdomen white.
- c.* Tail purplish black; under tail-coverts grayish. (Northwestern Colombia to southern Costa Rica.).....*Saucerottia niveoventer* (p. 441).
- cc.* Tail metallic coppery bronze; under tail-coverts cinnamomeous. (Panama to western Ecuador.).....*Saucerottia edwardi* (p. 443).
- aa.* Remiges (except outer primaries) cinnamon-rufous or chestnut basally.
- b.* Tail dark steel blue or metallic blue-black. (*Saucerottia cyanura*.)
- c.* Secondaries cinnamon-rufous tipped with black; primaries mostly dusky glossed with purplish; general coloration lighter. (Costa Rica and Nicaragua.).....*Saucerottia cyanura cyanura* (p. 445).
- cc.* Secondaries with at least terminal half blue-black, the basal portion chestnut; primaries mostly blue-black; general coloration darker. (Guatemala and Chiapas.).....*Saucerottia cyanura guatemalæ* (p. 446).
- bb.* Tail bronzy or partly chestnut.
- c.* Tail extensively chestnut basally.
- d.* Abdomen wholly green, like anterior under parts; middle rectrices and tips of other rectrices rich metallic purplish bronze or bronzy purple. (Guatemala and Chiapas.).....*Saucerottia devillei* (p. 447).
- dd.* Abdomen cinnamomeous or grayish; middle rectrices and tips of other rectrices duller coppery bronze or dull metallic violet. (*Saucerottia beryllina*.)
- e.* Middle rectrices and tips of other rectrices coppery bronze or reddish bronze; abdomen more cinnamomeous; green of upper and under parts more yellowish. (Eastern and central Mexico.)  
*Saucerottia beryllina beryllina* (p. 449).
- ee.* Middle rectrices and tips of other rectrices purplish or violaceous bronze; abdomen more grayish; green of upper and under parts less yellowish. (Western Mexico.).....*Saucerottia beryllina viola* (p. 451).
- cc.* Tail without chestnut or with only shafts and basal portion of outer web of lateral rectrices chestnut.
- d.* Tail bright metallic coppery bronze; under tail-coverts pale cinnamon-rufous; throat mostly green. (State of Oaxaca, southern Mexico.)  
*Saucerottia sumichrasti* (p. 451).
- dd.* Tail metallic bronzy olive-green, with shafts and basal portion of outer webs of lateral rectrices chestnut; under tail-coverts pale greenish bronze; throat mostly white. (State of Vera Cruz, Mexico.)  
*Saucerottia ocai* (p. 452).

### SAUCEROTTIA SOPHIÆ SOPHIÆ (Bourcier and Mulsant).

#### SOPHIA'S HUMMING BIRD.

*Adult male.*—Above deep metallic green (nearly grass green) the lower rump more bronzy, sometimes coppery bronze or purple; upper tail-coverts and tail dark steel blue; remiges very dark brownish slate or dusky, glossed with bluish or violet; under parts bright metallic green, the feathers of chin and upper throat more or less edged or margined with grayish white, especially along median line; femoral and lumbar tufts white; under tail-coverts dark steel bluish, margined with pale grayish; maxilla dull black, mandible pale brownish or dull whitish (pink or reddish in life), blackish or dusky terminally; iris dark brown; feet dusky; length (skins), 91–97 (94); wing, 53–56.5 (55); tail, 29.5–32.5 (30.9); culmen, 18–20.5 (19.1).<sup>a</sup>

<sup>a</sup> Ten specimens.

*Adult female*.—Similar to the adult male, but slightly duller, the green of throat, etc., more broken by grayish white subbasal bars and pale grayish margins to the feathers, and under tail-coverts with broader grayish margins and duller or paler bluish central areas; length (skins), 88–96 (92); wing, 50–55 (52.7); tail, 29–31 (30); culmen, 18–20.5 (19.3).<sup>a</sup>

*Young*.—Similar to adults, but decidedly duller in coloration, especially the under parts, and feathers of rump tipped or terminally margined with brown.

Nicaragua (San Emili, Lake Nicaragua; boundary line between Nicaragua and Honduras, 180 miles from Pacific coast) and Costa Rica (San José; Las Cruces de Candelária; Escazú; Monte Redondo; Cartago; Tucurríqui; Bonilla; Carrillo; Cerro Santa Maria; Volcán de Miravalles; Bebedero; Barranca de Punta Arenas; Esparta; Río Turubales; Pigres; San Miguél; San Pedro de Mojón; Tenório; Orosí; Bolsón).

*T[rochilus] sophiæ* BOURCIER and Mulsant, Ann. Sci. Phys. et Nat. Lyon, ix, 1846, 318 ("Bogota"); *b* Rev. Zool., 1846, 316.

*P[olytmus] sophiæ* GRAY, Gen. Birds, i, Dec., 1848, 109.

*[Polytmus] sophiæ* GRAY, Hand-list, i, 1869, 131, no. 1670.

*[Amazilius] sophiæ* BONAPARTE, Consp. Av., i, 1850, 78.

*[Chlorestes. γ. Saucerottia] sophiæ* REICHENBACH, Aufz. der Colibr., 1854, 8.

*[Saucerottia] sophia* BONAPARTE, Rev. et Mag. de Zool., 1854, 255.

*Saucerottia sophiæ* GOULD, Introd. Troch., oct. ed., 1861, 162.—SCLATER, Cat. Am. Birds, 1862, 315 ("Central America").—LAWRENCE, Ann. Lyc. N. Y., ix, 1868, 127 (San José and Dota, Costa Rica).—BOUCARD, Proc. Zool. Soc. Lond., 1878, 71 (San José and Cartago, Costa Rica); (?) The Hum. Bird, v, 1895, 7 (Cali, n. w. Colombia).—EUDES-DESLONGCHAMPS, Ann. Mus. Caen, i, 1880, 425.—CARRIKER, Ann. Carnegie Mus., vi, 1910, 526 (Pacific slope and highlands of Costa Rica; habits).

*[Saucerottia] sophiæ* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 92.

*[Saucerottea] sophiæ* SIMON, Cat. Troch., 1897, 12.

*S[aucerottea] sophiæ* HARTERT, Das Tierreich, Troch., 1900, 53 (monogr.).

*Saucerottea sophiæ* BANGS, Auk, xxiv, 1907, 295 (Barranca de Punta Arenas).

*[Saucerottea] sophiæ* SHARPE, Hand-list, ii, 1900, 107.

*Saucerottia sophiæ* FRANTZIUS, Journ. für Orn., 1869, 317 (Costa Rica).

(??) *Saucerotia sophiæ* BOUCARD, The Hum. Bird, ii, 1892, 81 (Santa Marta and Barranquilla; Valencia, Venezuela; crit.).

*[Chlorestes] sophiæ* REICHENBACH, Troch. Enum., 1855, 4, pl. 697, figs. 4554, 4555.

*Erythronota sophiæ* GOULD, Mon. Troch., v, pt. xxii, July, 1861, pl. 322.

*H[emithylaca] sophiæ* CABANIS and HEINE, Mus. Hein., iii, 1860, 38, footnote ("Colombia").—HEINE, Journ. für Orn., 1863, 192.

*[Hemithylaca] sophiæ* HEINE and REICHENOW, Nom. Mus. Hein. Orn., 1890, 179 (Costa Rica; "Guatemala").

*Ariana sophiæ* Mulsant and Verreaux, Classif. Troch., 1866, 36; Hist. Nat. Ois.-Mouch., i, livr. 4, 1874, 328, pl. 28 ("Colombia;" Veragua; Costa Rica); iv, livr. 1, 1877, pl. 54, livr. 3, 1878, 185.

<sup>a</sup>Ten specimens.

<sup>b</sup>The alleged type in the Elliot collection, American Museum of Natural History, bears, on the original label, the locality *Nicaragua!*

[*Ariana*] *sophiæ* MULSANT, Ann. Soc. Linn. Lyon, n. s., xxii, 1876, 207.

*Amazilia sphiæ* ELLIOT, Classif. and Synop. Troch., 1879, 224.—ZELEDÓN, Cat. Aves de Costa Rica, 1882, 21; Anal. Mus. Nac. Costa Rica, i, 1887, 122 (San José, Costa Rica).—SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 224 (Bebedero and Tucurríqui, Costa Rica).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 303 (Nicaragua; Las Cruces de Candelária, etc., Costa Rica).—UNDERWOOD, Ibis, 1896, 442 (Bebedero and Volcán de Miravalles, Costa Rica).

*A[mazilia] sphiæ* RIDGWAY, Rep. U. S. Nat. Mus. for 1890 (1891), 363 (diagnosis, etc.).

*Amizilis sphiæ* OBERHOLSER, Proc. Ac. Nat. Sci. Phila., June 2, 1899, 208.

(?) *Trochilus* (——?) *caligatus* GOULD, Proc. Zool. Soc. Lond., 1848, 14 (Columbia).

(?) [*Saucerottia*] *caligatus* BONAPARTE, Consp. Av., i, 1850, 77.

(?) [*Chlorestes*] *γ. Saucerottia caligata* REICHENBACH, Aufz. der Colibr., 1854, 8.

(?) [*Chlorestes*] *caligata* REICHENBACH, Troch. Enum., 1855, 4.

(?) *H[emithylaca] caligata* CABANIS and HEINE, Mus. Hein., iii, 1860, 39 (Mérida, Venezuela).

*H[emithylaca] hoffmannii* CABANIS and HEINE, Mus. Hein., iii, March, 1860, 38 (Costa Rica; coll. Heine Mus.).—CABANIS, Journ. für Orn., 1862, 163 (San José, Costa Rica).

*Saucerottia hoffmanni* BOUCARD, Gen. Hum. Birds, 1894, 188 (San José).

#### SAUCEROTTIA ALFAROANA (Underwood.)

##### ALFARO'S HUMMING BIRD.

"Similar to *A. sphiæ*, but larger, and the bill rather longer and more curved. On the underside there is little difference, but the under tail-coverts are dark steel-blue, with a narrow white margin. On the upper surface the green of the plumage has a distinct blue tint, which becomes more intense on the crown and forehead. The upper tail-coverts are as in *A. sphiæ*. The mandible is pale for about its basal half, the rest and the maxilla black. Total length about 4.0 inches [102 mm.]; wing, 2.2 [55.9]; tail—outer rectrices 1.35 [34.3], middle rectrices 0.25 [6.3] shorter; bill, 1.0 [25.4]."<sup>a</sup>

Northwestern Costa Rica (Volcán de Miravalles).

*Amazilia alfaroana* UNDERWOOD, Ibis, 4th ser., ii, Oct., 1896, 441 (Volcán de Miravalles, Costa Rica; coll. ——?).

*Amizilis alfaroana* OBERHOLSER, Proc. Ac. Nat. Sci. Phila., 1899, 208.

*S[aucerottea] alfaroana* HARTERT, Das Tierreich, Troch., 1900, 53 (monogr.).

*[Saucerottea] alfaroana* SHARPE, Hand-list, ii, 1900, 107.

*Saucerottia cyanifrons alfaroana* CARRIKER, Ann. Carnegie Mus., vi, 1910, 527 (crit.).

#### SAUCEROTTIA NIVEOVENTER (Gould).

##### SNOWY-BREASTED HUMMING BIRD.

Similar to *S. edwardi*, but tail purplish black or violaceous-black (instead of bronze), and under tail-coverts grayish (instead of rufescent) centrally.

*Adult male*.—Pileum, hindneck, and upper back metallic green (nearly grass green); lower back, scapulars, and wing-coverts metallic

<sup>a</sup> Original description: Ibis, 1896, 441.



bronze, more or less coppery; rump and shorter upper tail-coverts grayish brown or olive, glossed with bronze, the longer upper tail-coverts dusky purplish bronze; tail slightly glossy violaceous-black, the middle rectrices sometimes glossed with purplish basally; remiges dark brownish slate or dusky, faintly glossed with violaceous; malar region, chin, throat, sides of neck, breast, and sides bright metallic green (yellowish emerald green), the feathers of chin, throat, and chest grayish white beneath surface, dusky grayish basally, those of other parts brownish gray beneath surface; abdomen, anal region, femoral tufts, and lumbar tufts white; under tail-coverts brownish gray, with darker shaft-streaks, margined with whitish; maxilla dull black; mandible pale brownish (reddish in life), dusky, or blackish terminally; iris dark brown; feet dusky; length (skins), 86–94 (89); wing, 50–56 (53.5); tail, 29–31 (29.9); culmen, 17.5–19.5 (18.3).<sup>a</sup>

*Adult female*.—Similar to the adult male and frequently not distinguishable, but usually (?) very slightly duller in coloration; length (skins), 84–89 (87); wing, 49.5–52.5 (51); tail, 28–30 (29); culmen, 18–19.5 (18.8).<sup>b</sup>

Panamá (Lion Hill; Panamá; Bugaba; David; Chitra; Boquete; Calobre; Cordillera del Chucu; Calovévora; Santiago de Veragua), southern Costa Rica (Talamanca; El General; Buenos Aires de Térraba; Boruca), and northern Colombia (Boquerón).

*Trochilus* (——?) *niveiventer* GOULD, Proc. Zool. Soc. Lond., 1850, 164 (near David, Veragua, Panamá; coll. J. Gould).

[*Chlorestes*. *γ*. *Saucerottia*] *niveiventer* REICHENBACH, Aufz. der Colibr., 1854, 8.

[*Thaumantias*] *niveiventer* BONAPARTE, Rev. et Mag. de Zool., 1854, 255.

[*Chlorestes*] *niveiventris* REICHENBACH, Troch. Enum., 1855, 4, pl. 700, figs. 4566, 4567.

*Erythronota niveiventris* GOULD, Mon. Troch., pt. xv, May, 1858 (vol. v), pl. 319; Introd. Troch., oct. ed., 1861, 161.—SALVIN, Proc. Zool. Soc. Lond., 1867, 155 (David and Santiago, Panamá; crit.); 1870, 210 (Volcán de Chiriquí, Chitra, Cordillera del Chucu, and Calovévora, Panamá).—BOUCARD, Notes quelques Troch., 1873, 12 (Veragua).

*H[emithylaca] niveiventris* CABANIS and HEINE, Mus. Hein., iii, 1860, 37 (Veragua).—Heine, Journ. für Orn., 1863, 192.

<sup>a</sup> Sixteen specimens.

<sup>b</sup> Ten specimens, from Costa Rica.

| Locality.                                                 | Wing. | Tail. | Ex-<br>posed<br>culmen. |
|-----------------------------------------------------------|-------|-------|-------------------------|
| MALES.                                                    |       |       |                         |
| Ten adult males from Costa Rica.....                      | 54.3  | 30    | 17.9                    |
| Five adult males from Panamá.....                         | 51.8  | 29.7  | 19                      |
| One adult male from northwestern Colombia (Boqueron)..... | 50.5  | 30    | 19                      |

- [*Hemithylaca*] *niveiventris* HEINE and REICHENOW, Nom. Mus. Hein. Orn., 1890, 179 (Veragua).
- Saucerottia niveiventris* SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1864, 365 (Lion Hill, Panamá).—Eudes-DESLONGCHAMPS, Ann. Mus. Caen, i, 1880, 429.
- [*Saucerottia*] *niveiventris* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 92.
- S[aucerottea]* *niveoventer* HARTERT, Das Tierreich, Troch., 1900, 54.
- [*Saucerottia*] *niveiventris* SIMON, Cat. Troch., 1897, 13.—SHARPE, Hand-list, ii, 1900, 107.
- Saucerottea niveoventer* BANGS, Proc. New Engl. Zool. Club, iii, 1902, 29 (Boquete, Panama, 4,000 ft.); Auk, xxiv, 1907, 295 (Boruca, s. w. Costa Rica).
- Saucerottia niveoventer* CARRIKER, Ann. Carnegie Mus., vi, 1910, 528 (Boruca and Buenos Aires de Térraba, Costa Rica; habits).
- Ariana niveiventris* MULSANT and VERREAUX, Classif. Troch., 1866, 36.
- [*Polytmus*] *niveiventris* GRAY, Hand-list, i, 1869, 133, no. 1698.
- Leucodora niveiventris* MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., i, livr. 4, 1874, 313; iv, livr. 3, 1878, 184.
- [*Leucodora*] *niveiventris* MULSANT, Ann. Soc. Linn. Lyon, n. s., xxii, 1876, 206.
- Amazilia niveiventris* ELLIOT, Classif. and Synop. Troch., 1879, 222.—ZELEDÓN, Cat. Aves de Costa Rica, 1882, 21.—SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 221.—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 302.—BOUCARD, The Hum. Bird, ii, 1892, 81; Gen. Hum. Birds, 1895, 202.
- A[mazilia]* *niveoventer* RIDGWAY, Rep. U. S. Nat. Mus. for 1890 (1891), 363 (diagnosis, etc.).

#### SAUCEROTTIA EDWARDI (Delattre and Bourcier).

##### WILSON'S HUMMING BIRD.

Similar to *S. niveoventer* but tail metallic bronze instead of violet-blackish, and under tail-coverts rufescent, instead of grayish, centrally.

*Adult male*.—Pileum, hindneck, and upper back metallic green (nearly grass-green); lower back and scapulars metallic bronze or coppery bronze, the wing-coverts usually more decidedly coppery; rump and upper tail-coverts much duller bronze; tail wholly metallic bronze or coppery bronze; remiges dark brownish slate or dusky, faintly glossed with purplish; malar, suborbital, and auricular regions, chin, throat, sides of neck, breast, and sides bright metallic green (yellowish emerald green), the feathers of chin and throat grayish white, those of other parts light brownish gray beneath surface; abdomen, anal region, femoral tufts and lumbar tufts white; under tail-coverts light grayish chestnut margined with paler; maxilla dull black; mandible pale brownish or whitish (reddish in life), dusky terminally; iris dark brown; feet dusky; length (skins),

83-97 (91); wing, 47-56.5 (50.7); tail, 28-30.5 (29.9); culmen, 17.5-20 (18.7).<sup>a</sup>

*Adult female*.—Similar to the adult male but very slightly duller, the under tail-coverts paler and more grayish with broader pale (often whitish) margins; length (skins), 87-95 (91); wing, 50-54.5 (52.2); tail, 27.5-32.5 (29.4); culmen, 17.5-20 (19).<sup>b</sup>

Panamá (Lion Hill and Paraiso stations, Panamá Railway; Panamá; Verágua; San Miguél Island; Saboga Island); northwestern Ecuadór (Santo Domingo).

*Trochilus edward* DELATTRE and BOURCIER, Rev. Zool., 1846, 308 (Panamá; type now in coll. Ac. Nat. Sci. Phila.).

*[Amazilius] edward* BONAPARTE, Consp. Av., i, 1850, 78.

*[Thaumantias] edward* BONAPARTE, Rev. et Mag. de Zool., 1854, 255.

*[Polytmus] edward* GRAY, Hand-list, i, 1869, 132, no. 1697.

*Amizilis edward* OBERHOLSER, Proc. Ac. Nat. Sci. Phila., June 2, 1899, 208.

*Saucerottia edward* OBERHOLSER, Proc. U. S. Nat. Mus., xxiv, no. 1258, Jan., 1902, 316 (Santo Domingo, n. w. Ecuadór; crit.).

*P[olytmus] edwardsii* GRAY, Gen. Birds, i, Dec., 1848, 109.

*[Chlorestes. γ Saucerottia] edwardsii* REICHENBACH, Aufz. der Colibr., 1854, 8.

*[Chlorestes] edwardsii* REICHENBACH, Troch. Enum., 1855, 4, pl. 698, figs. 4558, 4559.

*Erythronota edwardi* GOULD, Mon. Troch., pt. xv, 1858 (vol. v), pl. 318; Introd. Troch., oct. ed., 1861, 161.—LAWRENCE, Ann. Lyc. N. Y., vii, 1862, 292 (Lion Hill, Panamá); 1868, 317 ("Costa Rica").—FRANTZIUS, Journ. für Orn., 1869, 317 ("Costa Rica").

*H[emithylaca] edwardi* CABANIS and HEINE, Mus. Hein., iii, 1860, 37, footnote (Panamá).

*E[ratina] edwardi* HEINE, Journ. für Orn., 1863, 191.

*Saucerottia edwardi* EDES-DESLONGCHAMPS, Ann. Mus. Caen, i, 1880, 427.

*[Saucerottia] edwardi* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 92.

*[Saucerottea] edwardi* SIMON, Cat. Troch., 1897, 13.—SHARPE, Hand-list, ii, 1900, 107.

*Saucerottea edwardi* THAYER and BANGS, Bull. Mus. Comp. Zool., xlii, 1905, 149 (San Miguél and Saboga islands, Bay of Panamá).

*Leucodora edwardi* MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., i, livr. 4, 1874, 311 (Panamá; Verágua; "Costa Rica"); iv, livr. 3, 1878, 184.

<sup>a</sup> Eighteen specimens.

<sup>b</sup> Eight specimens.

| Locality.                                            | Wing. | Tail. | Ex-<br>posed<br>culmen. |
|------------------------------------------------------|-------|-------|-------------------------|
| MALES.                                               |       |       |                         |
| Five adult males from Panamá.....                    | 52.3  | 29.7  | 18.7                    |
| Nine adult males from San Miguél Island, Panamá..... | 54.4  | 30.1  | 18.6                    |
| Two adult males from Saboga Island, Panamá.....      | 54.5  | 30.2  | 18.5                    |
| Two adult males from western Ecuadór.....            | 53    | 29.2  | 19.5                    |
| FEMALES.                                             |       |       |                         |
| Two adult females from Panamá.....                   | 50.5  | 27.5  | 18.7                    |
| Five adult females from San Miguél Island.....       | 53.1  | 30.2  | 19                      |
| One adult female from Saboga Island.....             | 51.5  | 29.5  | 19.5                    |



- [*Leucodora*] *edwardi* MULSANT, Ann. Soc. Linn. Lyon, xxii, n. s., 1876, 206.  
*Saucerottia edwardi* SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1864, 365 (Panamá).  
*S[aucerottea] edwardi* HARTERT, Das Tierreich, Troch., 1900, 54.  
*Amazilia edwardi* MULSANT and VERREAUX, Classif. Troch., 1866, 35.—ELLIOT, Classif. and Synop. Troch., 1879, 221.—ZELEDÓN, Cat. Aves de Costa Rica, 1882, 21; Anal. Mus. Nac. Costa Rica, i, 1887, 122.—SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 221 (Lion Hill, Panamá, and Paraiso, Panamá).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 302.—BOUCARD, The Hum. Bird, ii, 1892, 81 (Veragua; Panamá); Gen. Hum. Birds, 1895, 202.  
*A[mazilia] edwardii* RIDGWAY, Rep. U. S. Nat. Mus. for 1890 (1891), 363 (diagnosis, etc.).  
*Amizilis edwardi* BANGS, Auk, xviii, Jan., 1901, 28 (San Miguel I., Panamá).

### SAUCEROTTIA CYANURA CYANURA (Gould).

#### BLUE-TAILED HUMMING BIRD.

*Adult male*.—Pileum, hindneck, back, scapulars, and lesser wing-coverts deep metallic green; rump rather dull purplish bronze, deepening into dark metallic bluish on upper tail-coverts; tail wholly dark metallic violet-blue; remiges dusky, faintly glossed with violaceous, the secondaries and inner primaries chestnut or rufous-chestnut broadly tipped with violet-dusky; under parts mostly bright metallic green (between grass green and yellowish emerald green), sometimes slightly broken by very narrow and indistinct dull whitish or pale grayish margins to the feathers (especially on lower abdomen) and by an exposure of the pale grayish basal areas and edgings to feathers of throat; under tail-coverts rather dull steel blue or dark metallic violet-blue, sometimes partly coppery bronze, narrowly margined with pale grayish or light chestnut; femoral and lumbar tufts white; maxilla dull black, mandible dull whitish (reddish in life?) with dusky tip; iris dark brown; feet dusky; length (skins), 89–92.5 (91); wing, 51–54 (52.9); tail, 27.5–30 (28.9); culmen, 18–19.5 (18.8).<sup>a</sup>

*Adult female*.—Similar to the adult male, but duller in color, the feathers of under parts, especially those of chin, throat, and chest, usually narrowly margined with whitish, and those of chin and upper throat showing more or less of the subterminal white, the lower abdomen mixed with dull buffy whitish, the under tail-coverts more grayish, and rump duller, less purplish; length (skins), 87–89 (88); wing, 51; tail, 28–30 (28.7); culmen, 18.5–19 (18.8).<sup>b</sup>

Nicaragua (Realejo; Chontales; Volcán de Chinandega; Matagalpa; San Gerónimo, Chinandega; boundary line between Nicaragua and Honduras, 180 miles from Pacific coast), and Costa Rica (San Pedro).

*Amazilia cyanura* GOULD, Mon. Troch., pt. xviii, Sept., 1859 (vol. v, 1861), pl. 315 (Realejo, Nicaragua; coll. J. Gould).—ELLIOT, Classif. and Synop. Troch., 1879, 223, part (Nicaragua).—SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 212, part (Realejo, Chontales, Volcán de Chinandega, and Matagalpa, Nicaragua).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 297, part (Nicaraguan localities).—BOUCARD, Gen. Hum. Birds, 1895, 206, part (Nicaragua).

<sup>a</sup> Four specimens (three from Nicaragua, one from Costa Rica). <sup>b</sup> Three specimens.

- [*Amazilia*] *cyanura* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 92, part (Nicaragua).
- A[*mazilia*] *cyanura* RIDGWAY, Man. N. Am. Birds, 1887, 318, part (Nicaragua); Rep. U. S. Nat. Mus. for 1890 (1891), 363, part (Nicaragua; diagnosis, etc.).
- Amizilis cyanura* OBERHOLSER, Proc. Ac. Nat. Sci. Phila., June 2, 1899, 207.
- H[*emithylaca*] *cyanura* CABANIS and HEINE, Mus. Hein., iii, 1860, 38, footnote (Realejo).
- Pyrrhophæna cyanura* GOULD, Introd. Troch., oct. ed., 1861, 160.—MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., i, livr. 4, 1874, 307 (Realejo).
- [*Pyrrhophæna*] *cyanura* MULSANT, Ann. Soc. Linn. Lyon, n. s., xxii, 1876, 206.
- E[ratina] cyanura* HEINE, Journ. für Orn., 1863, 191.
- Ariana cyanura* MULSANT and VERREAUX, Classif. Troch., 1866, 36.
- [*Polytmus*] *cyanurus* GRAY, Hand-list, i, 1869, 132, no. 1684.
- Saucerotia cyanura* EUDÉS-DESLONGCHAMPS, Ann. Mus. Caen, i, 1880, 417.
- [*Saucerottea*] *cyanura* HARTERT, Das Tierreich, Troch., 1900, 52, part (Nicaragua).
- [*Saucerottea*] *cyanura* SIMON, Cat. Troch., 1897, 13.—SHARPE, Hand-list, ii, 1900, 107.
- Amizilis cyanura* OBERHOLSER, Proc. Ac. Nat. Sci. Phila., June 2, 1899, 207.
- Saucerottea cyanura impatiens* <sup>a</sup> BANGS, Proc. Biol. Soc. Wash., xix, July 30, 1906, 104 (San Pedro de Mojón, Costa Rica; coll. E. A. and O. Bangs).
- Saucerotia cyanura impatiens* CARRIKER, Ann. Carnegie Mus., vi, 1910, 526 (Costa Rica; crit.).

### SAUCEROTTIA CYANURA GUATEMALÆ Dearborn.

#### GUATEMALAN BLUE-TAILED HUMMING BIRD.

Similar to *S. c. cyanura*, but much darker in color, especially the wings; primaries blue-black instead of violet-dusky; chestnut on basal portion of remiges darker and much more restricted; green of upper parts darker, and blue of tail more violaceous, especially on basal portion of outer webs of rectrices, where the color sometimes inclines to metallic purple, the under tail-coverts almost wholly blue-black or dark steel blue, or else margined with darker grayish or chestnut.

*Adult male*.—Length (skins), 92–100 (97); wing, 53–56 (54.5); tail, 30–31.5 (30.8); culmen, 18.5–19 (18.8).<sup>b</sup>

*Adult female*.—Length (skins), 94–100 (97); wing, 50–52 (51); tail, 30; culmen, 19.5–20 (19.7).<sup>c</sup>

Pacific slope of Guatemala (Mazatenango, Suchitepequez; Patulúl;<sup>d</sup> Retalhuleu; Pie de la Cuesta, San Marcos) and Chiapas (Huehuetán).

*Amazilia cyanura* (not of Gould) SALVIN, Ibis, 1863, 239 (Pacific coast, Guatemala), 1866, 195 (Retalhuleu and Mazatenango, Guatemala); Cat. Birds Brit. Mus.; xvi, 1892, 212, 661, part (Retalhuleu and Pie de la Cuesta, Guatemala).—ELLIOT, Classif. and Synop., Troch., 1879, 223, part (Guatemala).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 297, part (Retalhuleu and Mazatenango, Guatemala).—BOUCARD, Gen. Hum. Birds, 1895, 206, part (Guatemala).

<sup>a</sup> I am not able to distinguish the type of *S. c. impatiens* from Nicaraguan examples of true *S. cyanura*, except by the very slightly less violaceous blue of the tail, all the characters mentioned in the original description failing to hold good.

<sup>b</sup> Three specimens.

<sup>c</sup> Two specimens.

<sup>d</sup> See p. 448, footnote.

- [*Amazilia*] *cyanura* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 92, part (Guatemala).  
*A[amazilia] cyanura* RIDGWAY, Man. N. Am. Birds, 1887, 318, part (Guatemala); Rep. U. S. Nat. Mus., 1890, 363, part (Guatemala).  
*S[aucerottia] cyanura* HARTERT, Das Tierreich, Troch., 1900, 52, part (Guatemala).  
*Saucerottia cyanura guatemalæ* DEARBORN, Pub. 125 (Orn., i, no. 3), Field Mus. N. H., Nov., 1907, 97 (Mazatenango, Dept. Suchitepequez, Guatemala; coll. Field Mus. N. H.).

**SAUCEROTTIA DEVILLEI (Bourcier and Mulsant).**

**DEVILLE'S HUMMING BIRD.**

Similar to *S. beryllina beryllina*, but primaries wholly dusky or with only the extreme basal (concealed) portion rufescent, and secondaries dusky for at least terminal half of exposed portion, abdomen usually (at least in adult males) wholly metallic green, and bronze color of tail usually more strongly purplish.

*Adult male*.—Pileum, hindneck, back, and scapulars bright metallic green (nearly grass green), the pileum usually darker or duller; rump olive-bronzy, bronze, purplish bronze, or purplish, deepening into more decided purple or violet-purple on upper tail-coverts; middle rectrices metallic purplish bronze (usually darker and more purplish terminally), the remaining rectrices dark chestnut or maroon margined with metallic reddish or purplish bronze or bronze-purple;<sup>a</sup> remiges dusky, faintly glossed with violet, the basal half of exposed portion of secondaries chestnut, the extreme basal portion of inner primaries sometimes tinged with the same; under parts, including abdomen, mostly bright metallic green (between grass green and yellowish emerald green); under tail-coverts light chestnut or vinaceous-chestnut, usually indistinctly margined with paler; femoral and lumbar tufts white; maxilla dull black, mandible whitish (reddish in life) with dusky tip; iris dark brown; feet dusky; length (skins), 86–100 (92); wing, 49–55.5 (52.6); tail, 29–31 (30.2); culmen, 17–20 (18.5).<sup>b</sup>

*Adult female*.—Similar to the adult male, but duller in color, especially the under parts, the lower abdomen sometimes pale buffy grayish; the under tail-coverts paler and more grayish chestnut, with (usually) broad and distinct whitish margins, and green of under parts broken by narrow pale grayish or dull whitish margins to the feathers, as well as whitish on basal and lateral portion of feathers on gular region; length (skins), 87–95 (91); wing, 51–53 (51.8); tail, 29.5–30 (29.7); culmen, 26–27.5 (26.8).<sup>c</sup>

<sup>a</sup> In some specimens (possibly representing another form) all the rectrices, except sometimes the middle pair, are clear chestnut margined terminally, more or less broadly, with metallic golden, coppery, or purplish bronze.

<sup>b</sup> Ten specimens.

<sup>c</sup> Three specimens.



Guatemala (Dueñas; Choctúm; Yzabál; Gualán; Guatemala City; Amatitlán; Lake Amatitlán; Patulúl,<sup>a</sup> Sololá; Volcán de Fuego; La Trinidad; Vera Paz); Yucatan; Chiapas (Gineta Mts.); Salvador (Volcán de San Miguel; La Libertad).

*Trochilus devillei* BOURCIER and Mulsant, Rev. Zool., 1848, 272 (Guatemala).—GRAY, Gen. Birds, iii, 1849, App., 30a.

[*Amazilia devillei* REICHENBACH, Aufz. der Colibr., 1854, 10; Troch. Enum., 1855, 8, pl. 778, figs. 4807, 4808.

*Amazilia devillei* GOULD, Mon. Troch., pt. xix, 1860 (vol. v, 1861), pl. 313.—MULSANT and VERREAUX, Classif. Troch., 1866, 35.

*Amazilia devillii* SCLATER, Cat. Am. Birds, 1862, 315 (Dueñas, Guatemala).—BOUCARD, Proc. Zool. Soc. Lond., 1883, 451 (Yucatan).—SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 211, 660 (Dueñas, Volcán de Fuego, and Choctúm, Guatemala; La Libertad and Volcán de San Miguel, Salvador).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 296.

[*Amazilia devillii* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 92.

A[*mazilia*] *devillii* RIDGWAY, Man. N. Am. Birds, 2d ed., 1896, 317.

[*Amazilius devillei* BONAPARTE, Rev. et Mag. de Zool., 1854, 254.

*Amizilis devillii* Eudes-Deslongchamps, Ann. Mus. Caen, i, 1880, 412.—OBERHOLSER, Proc. Ac. Nat. Sci. Phila., 1899, 207.

*Pyrhophæna devillii* SALVIN, Ibis, 1860, 204.

*Pyrhophæna devillei* GOULD, Introd. Troch., oct. ed., 1861, 158.—MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., i, livr. 4, 1874, 305, pl. 27.—LAWRENCE, Bull. U. S. Nat. Mus., no. 4, 1876, 33 (Gineta Mts., Chiapas).—BOUCARD, Liste Ois. récol. Guat., 1878, 47 (Cobán).

[*Pyrhophæna devillei* MULSANT, Ann. Soc. Linn. Lyon, n. s., xxii, 1876, 206.

E[*ranna*] *devillei* HEINE, Journ. für Orn., 1863, 188.

[*Polytmus devillei* GRAY, Hand-list, i, 1869, 132, no. 1682.

S[*aucerottea*] *devillei* HARTERT, Das Tierreich, Troch., 1900, 57.

[*Saucerottea devillei* SIMON, Cat. Troch., 1897, 13.—SHARPE, Hand-list, ii, 1900, 108.

*Saucerottea devillii* DEARBORN, Pub. 125, Field Mus. N. H., 1907, 98 (Patulúl and Lake Amatitlán, Guatemala).

*Amazilia arsinœ* (not *Ornismya arsinœ* Lesson) SCLATER and SALVIN, Ibis, 1859, 130 (Guatemala).—SALVIN and SCLATER, Ibis, 1860, 40 (Yzabál and Dueñas, Guatemala).—SALVIN, Ibis, 1860, 195 (Yzabál and Dueñas).

*Amazilia dumerillii* (not *Ornismya dumerili* Lesson) SALVIN, Ibis, 1860, 270 (Dueñas; habits).

*Amazilia mariæ* (not *Trochilus mariæ* Bourcier) ELLIOT, Classif. and Synop. Troch., 1879, 222.—BOUCARD, Gen. Hum. Birds, 1895, 205.

A[*mazilia*] *mariæ* RIDGWAY, Man. N. Am. Birds, 1887, 317.

[*Eranna mariæ* HEINE and REICHENOW, Nom. Mus. Hein. Orn., 1890, 179.

A[*mazilia*] *maria* RIDGWAY, Rep. U. S. Nat. Mus. for 1890 (1891), 363.

(?) *Pyrhophæna beryllina* (not *Trochilus beryllinus* Lichtenstein?) BOUCARD, Liste Ois. récol. Guat., 1878, 47 (Cobán).

<sup>a</sup> A specimen from Patulúl, in the collection of the Field Museum of Natural History (No. 22627), placed by Mr. Dearborn with *S. devillii* in his list "Catalogue of a Collection of Birds from Guatemala" (Pub. 125, Field Mus. Nat. Hist., 1907, 98), is exactly intermediate between that species and *S. cyanura* (which occurs in the same locality) and is undoubtedly a hybrid between the two.

## SAUCEROTTIA BERYLLINA BERYLLINA (Lichtenstein).

## BERYLLINE HUMMING BIRD.

*Adult male*.—Above bright metallic green or bronze-green, passing into duller purplish bronzy on rump, the upper tail-coverts rather dull bronzy purple or violet-purple; middle rectrices metallic purplish or coppery bronze or bronzy purple, the remaining rectrices chestnut, tipped, or broadly margined at tip, with purplish bronze (this sometimes wanting or obsolete on outermost rectrix); secondaries chestnut, or dull rufous-chestnut, broadly tipped with dusky, the innermost ones (tertials) mostly of the latter color; primaries chestnut or dull rufous-chestnut, with terminal portion (extensively) dusky, faintly glossed with purplish; malar region, chin, throat, sides of neck, chest, breast, sides, flanks, and upper abdomen bright metallic green (brighter and more yellowish than grass green), the feathers of chin and throat abruptly grayish white, those of under parts of body dusky brownish gray, beneath surface; lower abdomen pale buffy gray, grayish cinnamon, or isabella color; femoral and lumbar tufts white; under tail-coverts pale chestnut broadly edged basally and (usually) narrowly margined terminally with white; maxilla dull black; mandible pale brownish or dull brownish white (reddish in life), dusky at tip; iris dark brown; feet grayish brown or dusky; length (skins), 90–103 (97); wing, 52–56.5 (54.7); tail, 30–32 (31.3); culmen, 18–20 (18.7).<sup>a</sup>

*Adult female*.—Similar to the adult male, but slightly duller in color, especially the under parts, nearly the whole abdomen being dull cinnamon-buffy, the feathers of chin and throat showing more or less of the basal or subterminal white; length (skins), 88–98 (92); wing, 52–55 (53.6); tail, 29.5–32 (30.2); culmen, 18–20 (19).<sup>b</sup>

Eastern and east-central Mexico, in States of Vera Cruz (Jalapa; Córdoba; Orizaba; Jico; Playa Vicente; Cofre de Perote; Coátepec; Omealca; Tospán), Mexico (Valley of Mexico), Morelos (Cuernavaca), Oaxaca (Pluma; Oaxaca; Villa Alta; Totóntepec; Chimalapa), and Guanajuato (Moro León).<sup>c</sup>

*Trochilus beryllinus* LICHTENSTEIN, Preis-Verz. Mex. Vög., 1830, 1 (Mexico); Journ. für Orn., 1863, 55.

*P[yrrophæna] beryllina* CABANIS and HEINE, Mus. Hein., iii, 1860, 36.

*Pyrrophæna beryllina* MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., i, livr. 4, 1874, 303; iv, livr. 3, 1878, 182 (Córdoba, Tospán, and Orizaba, Vera Cruz).—GOULD, Introd. Troch., oct. ed., 1861, 158.—BOUCARD, Notes quelques Troch., 1873, 12 (Córdoba; Orizaba; Oaxaca).

<sup>a</sup> Ten specimens.

<sup>b</sup> Four specimens.

<sup>c</sup> Specimens from Guanajuato are intermediate between the typical form and *S. b. viola*.

- [*Pyrrhophæna*] *beryllina* MULSANT, Ann. Soc. Linn. Lyon, n. s., xxii, 1876, 206.
- Amazilia beryllina* GOULD, Mon. Troch., pt. xxii, July, 1861 (vol. v), pl. 312.—SCLATER, Cat. Am. Birds, 1862, 314; Proc. Zool. Soc. Lond., 1864, 177 (Valley of Mexico).—DUGÈS, La Natureza, i, 1870, 141 (Guanajuato).—VILLADA, La Natureza, ii, 1874, 364 (Valley of Mexico).—D'OCA, La Natureza, iii, 1875, 23 (Valley of Mexico; Orizaba; Córdoba; Jalapa); Troq. de Mex., 1875, pl. (2), fig. 6.—ELLIOT, Classif. and Synop. Troch., 1879, 221.—RIDGWAY, Rep. U. S. Nat. Mus. for 1890 (1891), 363.—SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 209, part.—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 295, part.—JOUY, Proc. U. S. Nat. Mus., xvi, 1894, 784 (Cuernavaca, Morelos).—BOUCARD, Gen. Hum. Birds, 1895, 204.—CHAPMAN, Bull. Am. Mus. N. H., x, 1898, 33 (Jalapa).
- [*Amazilia*] *beryllina* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 92.
- A[mazilia] beryllina* RIDGWAY, Man. N. Am. Birds, 1887, 317; Rep. U. S. Nat. Mus. for 1890 (1891), 363 (diagnosis, etc.).
- Amizilis beryllinus* EUDES-DESLONGCHAMPS, Ann. Mus. Caen, i, 1880, 40.
- Amizilis beryllina* OBERHOLSER, Proc. Ac. Nat. Sci. Phila., 1899, 207.
- Amizilis beryllina beryllina* MILLER (W. De W.), Bull. Am. Mus. N. H., xxi, Nov. 24, 1905, 353, in text.
- Amazilia berilina* D'OCA, Los Colibris de Mex., 1875, 14, pl. (2), fig. 6.—HERRERA, La Natureza, (2), i, 1891, 322 (Valley of Mexico).
- [*Amazilia*] *berilina* SANCHEZ, Anal. Mus. Nac. Mex., i, 1877, 961 (Valley of Mexico; Orizaba; Córdoba).
- E[ran]na beryllina* HEINE, Journ. für Orn., 1863, 188.
- [*Eran]na beryllina* HEINE and REICHENOW, Nom. Mus. Hein. Orn., 1890, 179.
- [*Polytmus*] *beryllinus* GRAY, Hand-list, i, 1869, 132, no. 1681.
- S[aucerottea] beryllina* HARTERT, Das Tierreich, Troch., 1900, 56, part.
- [*Saucerottea*] *beryllina* SIMON, Cat. Troch., 1897, 13.—SHARPE, Hand-list, ii, 1900, 108.
- Ornismya arsinoe* LESSON, Hist. Nat. Colibris (Suppl. Ois.-Mouch.), 1829, 154, pls. 28, 29 (Mexico); Index Gen. et Synop. Troch., 1832, p. xxviii, Rev. Zool., 1838, 314; 1839, 18.
- P[olytmus] arsinoe* GRAY, Gen. Birds, i, Dec., 1848, 109.
- [*Amazilius*] *arsinoe* BONAPARTE, Consp. Av., i, 1850, 77; Rev. et Mag. de Zool., 1854, 254.
- Amazilius arsinoe* SCLATER, Proc. Zool. Soc. Lond., 1856, 287; 1858, 297 (Oaxaca); 1859, 297 (Jalapa), 386 (Playa Vicente).
- A[mazilia] arsinoe* REICHENBACH, Aufz. der Colibr., 1854, 10; Troch. Enum., 1855, 8, pl. 774, figs. 4794-4797.
- Amazilia arsinoe* MULSANT and VERREAUX, Classif. Troch., 1866, 35.
- (?) *T[rochilus] mariæ* BOURCIER, Ann. Sci. Phys. et Nat. Lyon, ix, 1846, 319 ("Venezuela;" error?); Rev. Zool., 1846, 316.
- (?) *H[ylocharis] mariæ* GRAY, Gen. Birds, i, Dec., 1848, 115.
- (?) [*Hylocharis*] *mariæ* BONAPARTE, Consp. Av., i, 1850, 74.
- (?) [*Chlorestes*.  $\beta$ . *Smaragdītis*] *mariæ* REICHENBACH, Aufz. der Colibr., 1854, 7.
- (?) [*Chlorestes*] *mariæ* REICHENBACH, Troch. Enum., 1855, 4, pl. 695, fig. 4549.
- (?) [*Saucerottia*] *mariæ* BONAPARTE, Rev. et Mag. de Zool., 1854, 255.
- (?) *P[anychlora] mariæ* CABANIS and HEINE, Mus. Hein., iii, 1860, 49, footnote.
- Amazilia mariæ* (not of Elliot) FERRARI-PEREZ, Proc. U. S. Nat. Mus., ix, 1876, 158 (Jalapa).



## SAUCEROTTIA BERYLLINA VIOLA (Miller).

## VIOLACEOUS HUMMING BIRD.

Similar to *S. b. beryllina*, but upper tail-coverts decidedly violet or bluish violet, middle rectrices more purplish bronze (sometimes violet), and abdomen usually much less cinnamonaceous (buffy grayish or cinnamon-grayish).

*Adult male*.—Length (skins), 92–100 (97); wing, 52–57.5 (55.5); tail, 27.5–32.5 (31.2); culmen, 18–20.5 (19.1).<sup>a</sup>

*Adult female*.—Length (skins), 91–100 (97); wing, 50.5–55.5 (53.9); tail, 28.5–31.5 (30.8); culmen, 19–21 (20).<sup>b</sup>

Western Mexico, in States of Sinaloa (Plomosas; Mount Lisiaraga; Jalpa; Los Píeles; Los Limones; La Balla; Choix), Jalisco (Tonila; Bolaños; Zapotlán; San Marcos; Beltrán; Volcán de Colima), Michoacán (Patzcuaro; Los Reyes), and Guerrero (Omiteme; El Rincón; Acahuitzotla; Chilpancingo; Amula; Xautipa) and Territory of Tepic (Sierra Madre; Sierra de Tepic; Tepic; San Blas; Huayimo).

*Amazilia beryllina* (not *Trochilus beryllinus* Lichtenstein) SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 209, part (Choix, Sinaloa; San Blas, Tepic, Huayimo, etc., Tepic; Bolaños, Zapotlan, Tonila, San Marcos, Beltran, and Volcán de Colima, Jalisco; Chilpancingo, Xautipa, Amula, and Omiteme, Guerrero).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 295 (localities in Sinaloa, Tepic, Jalisco, and Guerrero).—HARTERT (E. and C.), Novit. Zool., i, 1895, 20 (Chilpancingo, Guerrero, 5,000–7,000 ft.; descr. nest and eggs).

*Amizilis beryllina viola* MILLER (W. De W.), Bull. Am. Mus. N. H., xxi, Nov. 24, 1905, 353 (Jalpa, Sinaloa; coll. Am. Mus. N. H.).

## SAUCEROTTIA SUMICHRASTI (Salvin).

## SUMICHRAST'S HUMMING BIRD.

*Adult male*.—Above bright metallic grass green, darker on pileum, more golden or bronzy on rump and upper tail-coverts; tail bright metallic coppery bronze; remiges purplish dusky, with basal portion of secondaries and inner (proximal) primaries chestnut; under parts bright metallic grass green, more brilliant on throat and chest, where the feathers are white basally; under tail-coverts pale rufous; maxilla black, mandible flesh color with blackish tip; length (skin), 96; wing, 53; tail, 30.5; culmen, 23.<sup>c</sup>

Southern Mexico, in State of Oaxaca (Santa Efigénia, Tehuantepec).

*Amazilia sumichrasti* SALVIN, Ann. and Mag. N. H., vii, 1891, 376 (Santa Efigénia, Oaxaca; coll. Salvin and Godman); Cat. Birds Brit. Mus., xvi, 1892, 213, 661, pl. 7, fig. 2.—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 298.—BOUCARD, Gen. Hum., Birds, 1895, 205.

<sup>a</sup> Fourteen specimens.

<sup>b</sup> Ten specimens.

<sup>c</sup> Unknown to me, the above description being adapted from those in the *Biologia Centrali-Americana* and "Genera of Humming Birds," as cited below. The differences from *S. beryllina* are not very obvious in the descriptions consulted.

- Amizilis sumichrasti* OBERHOLSER, Proc. Ac. Nat. Sci. Phila., June 2, 1899, 208.  
*S[aucerottea] sumichrasti* HARTERT, Das Tierreich, Troch., 1900, 208 (monogr.).  
*[Saucerottea] sumichrasti* SIMON, Cat. Troch., 1897, 13.—SHARPE, Hand-list, ii, 1900, 108.

### SAUCEROTTIA OCAI (Gould).

#### DE OCA'S HUMMING BIRD.

*Adult male*.—"Upper surface shining golden green, crown glittering grass-green, lower back and upper tail-coverts greenish bronze; throat and breast glittering grass-green, each feather being white with a green discal spot, those of the throat being small and the white of the feathers appearing; middle of the abdomen grey, flanks washed with golden green; under tail-coverts pale greenish bronze, broadly edged with dull white; tail bronzy olive-green, the lateral rectrices with the shafts and outer webs toward the base chestnut; bill black, mandible toward the base flesh-color. Total length about 4 inches [101.6 mm.], wing 2.3 [58.4], tail 1.35 [34.3], bill 0.85 [21.6]."<sup>a</sup>

Southeastern Mexico, in State of Vera Cruz (Jalapa; Paso del Macho?).

- Amazilia ocai* GOULD, Ann. and Mag. N. H., ser. 3, iv, 1859, 96 (Jalapa, Vera Cruz; coll. J. Gould); Mon. Troch., pt. xxii, 1861 (vol. v), pl. 289.—D'Oca, La Naturaleza, iii, 1875, 16; Troq. de Mex., 1875, 6, pl. (1), fig. 1.—MULSANT and VERREAUX, Classif. Troch., 1866, 35.—ELLIOT, Classif. and Synop. Troch., 1879, 221.—RIDGWAY, Rep. U. S. Nat. Mus. for 1890 (1891), 363.—SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 213.—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 298.—BOUCARD, Gen. Hum. Birds, 1895, 204.

*A[mazilia] ocai* RIDGWAY, Man. N. Am. Birds, 1887, 317; Rep. U. S. Nat. Mus. for 1890 (1891), 363 (diagnosis, etc.).

*Amazilius ocai* SCLATER, Proc. Zool. Soc. Lond., 1859, 367.

*Amizilis ocai* EUDES-DESLONGCHAMPS, Ann. Mus. Caen, i, 1880, 414.—OBERHOLSER, Proc. Ac. Nat. Sci. Phila., 1899, 208.

*P[yrrhophæna] ocai* CABANIS and HEINE, Mus. Hein., iii, 1860, 36, footnote.

*Pyrrhophæna ocai* MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., i, livr. 4, 1874, 301; iv, livr. 3, 1878, 182.—BOUCARD, Notes Troch. du Mex., 1875, 12.

*[Pyrrhophæna] ocai* MULSANT, Ann. Soc. Linn. Lyon, xxii, n. s., 1876, 206.

*Hemistilbon ocai* GOULD, Introd. Troch., oct. ed., 1861, 150.

*[Hemistilbon] ocai* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 91.

*[Polytmus] ocai* GRAY, Hand-list, i, 1869, 132, no. 1693.

*S[aucerottea] ocai* HARTERT, Das Tierreich, Troch., 1900, 56.

*[Saucerottea] ocai* SIMON, Cat. Troch., 1897, 13.—SHARPE, Hand-list, ii, 1900, 108.

(?) *Thaumatias lerdi* D'Oca, La Naturaleza, iii, 1875, 24 (Paso del Macho, Vera Cruz; coll. Señor Blasio); Troq. de Mex., 1875, pl. (2), fig. 7.

#### Genus GOLDMANIA Nelson.

*Goldmania* NELSON, Smiths. Misc. Coll., lvi, no. 21, July 8, 1911, 1. (Type, *Goldmania violiceps* Nelson.)

Similar in general form to *Saucerottia*, but under tail-coverts very small and short, the three median ones remarkably specialized, forming a tuft of interlocking stiff plumes which are very narrow

<sup>a</sup> Salvin, Cat. Birds Brit. Mus., xvi, 1892, 213.

proximally, broad and strongly recurved distally, and different in color (pure white) from the other coverts (bright metallic green); outermost (tenth) primary not longer than ninth, in adult male shorter and with terminal portion abruptly attenuated; and with the sexes very different in color.

Bill longer than head, slender, terete, but with base slightly expanded; nasal operculum overlapping maxillary tomium, but the greater part covered by latero-frontal feathers; maxilla with a distinct lateral groove extending about halfway (more or less) from nostril to tip. Wing about three times as long as exposed culmen, the tenth (outermost) primary, in adult male, slightly shorter than ninth, its incurved terminal portion abruptly attenuated, in adult female and young male equal, or nearly equal, to ninth, and not attenuated. Tail nearly three-fifths as long as wing, in adult male deeply emarginate and with rectrices very broad, in adult female rounded, with rectrices much narrower. Tarsal feathering short, the inner side of tarsus wholly exposed.

*Coloration*.—Adult male metallic green (brighter below), the forehead and crown bright violet-blue, the rectrices deep chesnut broadly margined with metallic bronze; adult female green above (including forehead and crown), under parts grayish white (spotted with green laterally), the lateral rectrices dusky distally, with a median terminal cuneate spot of dull whitish and a median fusiform area of chestnut on proximal portion.

*Range*.—Eastern Panamá (Cerro Azúl, 3,000 ft.). (Monotypic.)

#### GOLDMANIA VIOLICEPS Nelson.

##### GOLDMAN'S HUMMING BIRD.

*Adult male*.—Forehead and crown bright metallic blue, the feathers pale grayish buff or dull buffy white beneath surface, passing into pale gray basally; rest of upper parts, from occiput and postocular region to upper tail-coverts, inclusive, bright metallic grass green; tail deep chestnut, the remiges broadly margined (except on proximal portion of inner web) with metallic bronze; remiges slate-blackish, faintly glossed with violaceous; under parts bright metallic pure green, the feathers gray basally and with a rather broad subterminal bar of white (mostly concealed); femoral tufts white; under tail-coverts with specialized median tuft wholly pure white, the remainder bright metallic green; maxilla dull black; mandible dull whitish in dried skin (pinkish in life?), passing into dusky terminally; feet dusky; length (skin), 91; wing, 52.5; tail, 32.5; exposed culmen, 19.<sup>a</sup>

*Immature male*.—Similar to the adult male, but green of under parts less uniform (more broken by exposure of white subterminal

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<sup>a</sup> One specimen (the type.)



bars), and lateral rectrices narrowly tipped with pale buffy grayish, and with bronzy border to middle rectrices broader.

*Young male*.—Similar to the immature male, but violet-blue of crown replaced by dark metallic green, and under parts pale grayish, more or less spotted (except on abdomen and anal region) with metallic green; length (skin), 87–90 (88.5); wing, 51–54.5 (52); tail, 29–31 (29.2); exposed culmen, 17–18 (17.7).<sup>a</sup>

*Adult female*.—Above, including forehead and crown, metallic grass green; remiges blackish slate, faintly glossed with violaceous; middle rectrices dull metallic green proximally passing into dull bronze terminally; next pair similar but with a wedge-shaped median space of chestnut for proximal two-thirds, the remaining rectrices with the chestnut area increasing in width (but not in length) toward outermost, which is black subterminally and tipped with a diamond-shaped spot of pale brownish buff or dull brownish white, the next two rectrices (on each side) with a similar but successively smaller and more cuneate terminal spot; malar region, chin, throat, and rest of under parts dull white, or grayish white, the malar region, chin and throat, with small spots of grayish (paler and less distinct on chin and throat), the sides and flanks spotted with metallic green, especially on sides of breast, where the spots are larger and partly coalesced; under tail-coverts metallic green with basal portion white, the specialized median tuft entirely white, as in adult male; length (skin), 81; wing, 47.5; tail, 25.5; exposed culmen, 19.

Cerro Azúl, Eastern Panamá, 3,000 ft. alt.

*Goldmania violiceps* NELSON, Smiths. Misc. Colls., lvi, no. 21, July 8, 1911, 1 (Cerro Azúl, N. W. of Chepo, Panamá, 3,000 ft. alt.; coll. U. S. Nat. Mus.).

#### Genus ANTHRACOTHORAX Boie.

*Lampornis* (not of Swainson, June, 1827 *b*) SWAINSON, Zool. Journ., iii, Dec., 1827, 358. (Type, *Trochilus mango* Linnæus.)

*Anthracothonax* BOIE, Isis, 1831, 545. (Type, *Trochilus violicauda* Boddaert, i. e., *T. nigricollis* Vieillot.)

*Smaragdites* BOIE, Isis, 1831, 547. (Type, *Trochilus dominicus* Linnæus.)

[*Anthracothonax*.]  $\beta$ . *Floresia* REICHENBACH, Aufz. der Colib., 1854, 11. (Type, *Trochilus porphyurus* Shaw = *T. mango* Linnæus.)

[*Anthracothonax*.]  $\delta$ . *Hypophania* REICHENBACH, Aufz. der Colib., 1854, 11. (Type, *Trochilus dominicus* Linnæus.)

*Margarochrysis* REICHENBACH, Aufz. der Colib., 1854, 11. (Type, *Trochilus aurulentus* Vieillot.)

*Endoxa*<sup>c</sup> HEINE, Journ. für Orn., 1863, 179, in text. (Substitute for *Floresia* Reichenbach.)

Rather large Trochilidæ (length about 110–120 mm.), with broad, rounded or emarginate tail more than half as long as wing, bill

<sup>a</sup> Six specimens, including one immature male with blue crown.

<sup>b</sup> Philos. Mag., n. s., i, no. 6, June, 1827, 442; type, *Lampornis amethystinus* Swainson = *Ornismya henrica* Lesson and Delattre.

<sup>c</sup> "Von *ἑνδοξος* (berühmt)." (Heine.)

decidedly longer than head, stout, more or less decurved, terminal portion of maxillary tomium minutely serrate, and color of tail mainly either chestnut glossed with purple, or else (in *A. viridis*) bright bluish green or steel blue.

Bill decidedly longer than head, stout, rather broad and depressed basally, faintly to decidedly decurved; culmen rounded but at base contracted into a distinct narrow ridge; terminal portion of maxillary tomium minutely serrate; mandible with a broad lateral median sulcus or groove, which basally involves the greater part of upper half of the ramus. Nasal operculum very narrow anteriorly, nude for anterior and exterior portion, the frontal feathering extending anteriorly much beyond middle of nasal operculum, forming a more or less distinct but sometimes very short and obtuse point or antia on each side of the mesorhinium. Tarsus naked, rather stout; lateral toes nearly equal in length (or the outer one slightly longer), both slightly shorter than middle toe, the hallux shorter than lateral toes; claws relatively small. Wing less than three times as long as exposed culmen, the outermost primary longest. Tail more than half as long as wing, slightly rounded or emarginate, the rectrices broad, firm, rounded, or broadly subangular terminally.

*Coloration*.—Above metallic green, bronze-green, bronze or olive glossed with coppery bronze; tail (except middle rectrices) chestnut glossed with metallic violet or purple and margined with blackish, or else dark steel blue, greenish blue, or bluish green; adult males with under parts metallic green (with or without black on throat or chest), black medially bordered laterally with greenish blue or (on neck) with metallic violet-red, or else chin and throat greenish golden bronze, breast black; adult females (except of *A. mango* and *A. viridis*, in which sexes are alike in color), wholly dull whitish beneath (*A. dominicus* and *A. aurulentus*), or with a black, green, or bluish median stripe bordered laterally with a whitish one.

*Range*.—Southern Mexico to Cayenne, eastern Brazil, Bolivia, and Peru; Greater Antilles (Jamaica, Haiti, Porto Rico, and St. Thomas). (Nine species.)

#### KEY TO THE SPECIES AND SUBSPECIES OF ANTHRACOTHORAX.

- a. Tail not steel blue; under parts not uniform green (if green the chest more bluish, in contrast with emerald green of throat and bronze-green of sides).
- b. Sides of neck metallic reddish purple or purplish red; under parts wholly black, or else chin and throat (only) dark metallic greenish or bluish. (Jamaica.)  
*Anthracothorax mango*, both sexes (p. 457).
- bb. Sides of neck not metallic purple or reddish; under parts not wholly black, nor with chin and throat dark metallic greenish or bluish.
- c. Under parts without white (except femoral tufts). (*Adult males*.)
- d. Throat black, at least medially.
- e. Throat and under parts of body broadly (mostly) black. (*Anthracothorax nigricollis*.)

f. Smaller (wing of adult male averaging 66.9, tail 37.2, culmen 23.5; female, wing 65.2, tail 35.2, culmen 24.1); metallic color bordering black of throat and chest more bluish. (South America east of Andes to Panamá; St. Andrews Island, Caribbean Sea.)

**Anthracothonax nigricollis nigricollis**, adult male (p. 459).

ff. Larger (wing of adult male averaging 67.2, tail 37, culmen 25.3; female, wing 69.5, tail 37, culmen 27.2); metallic color bordering black of throat and chest more greenish. (Western Ecuador.)

**Anthracothonax nigricollis iridescens** (extralimital).<sup>a</sup>

ee. Throat and under parts of body narrowly black (medially), the latter sometimes merely darker green or bluish along median line. (*Anthracothonax prevostii*.)

f. Bill longer (culmen averaging 26.2); under parts of body usually more distinctly blackish along median line. (Southern Mexico to Honduras.)..... **Anthracothonax prevostii prevostii**, adult male (p. 463).

ff. Bill shorter (culmen averaging less than 25); under parts of body less distinctly blackish along median line.

g. Bill more slender, the culmen 23.5-25.5; upper parts and lateral under parts metallic green or bronze-green. (Nicaragua and Costa Rica.)

**Anthracothonax prevostii gracilirostris**, adult male (p. 465).

gg. Bill stouter and shorter, the culmen 22-23.5; upper parts and lateral under parts bronze or golden bronze. (Old Providence Island, Caribbean Sea.)

**Anthracothonax prevostii hendersoni**, adult male (p. 466).

dd. Throat metallic green or bronze.

e. Chest only partly black or without black, throat emerald green or bright golden green.

f. A black spot on chest; center of abdomen blackish. (Trinidad and Venezuela to Lower Amazon.)

**Anthracothonax gramineus** (extralimital).<sup>b</sup>

ff. No black on chest. (Panamá and southern Costa Rica.)

**Anthracothonax veraguensis**, adult male (p. 467).

ee. Chest wholly black.

f. Under parts of body mostly (sometimes wholly<sup>c</sup>) black; upper parts dark or deep bronze-green; larger (wing averaging 67.9, tail 42.9, culmen 23.8). (Island of Haiti.)

**Anthracothonax dominicus**, adult male (p. 468).

<sup>a</sup> *Lampornis iridescens* Gould, Introd. Troch., oct. ed., 1861, 65 (Guayaquil, w. Ecuador; coll. J. Gould).—*Anthracothonax violicaudus iridescens* Oberholser, Proc. U. S. Nat. Mus., xxiv, no. 1258, Jan., 1902, 321 (Nanegal, w. Ecuador; crit.).

<sup>b</sup> [*Trochilus*] *gramineus* Gmelin, Syst. Nat., i, pt. 1, 1788, 488 (based on *Hausse col vert* Buffon, Hist. Nat. Ois., vi, 58; *Black-breasted Hummingbird* Latham, Synopsis, i, pt. 2, 756).—*Trochilus gramineus* Audebert and Vieillot, Ois. Dorés, i, 1801, 23, pl. 9.—*Lampornis gramineus* Gould, Mon. Troch., ii, 1858, pl. 77; Introd. Troch., oct. ed., 1861, 65; Elliot, Classif. and Synop. Troch., 1879, 40; Salvin, Cat. Birds Brit. Mus., xvi, 1892, 95.—[*Lampornis*] *gramineus* Hartert, Das Tierreich, Troch., 1900, 98 (monogr.).—[*Polytmus*] *gramineus* Gray, Hand-list, i, 1869, 125, no. 1581.—*Anthracothonax gramineus* Berlepsch, Novit. Zool., xv, 1908, 263 (Cayenne; crit.).—[*Trochilus*] *maculatus* Gmelin, Syst. Nat., i, pt. 1, 1788, 488 (based on *Colibri à cravate verte* Buffon, Hist. Nat. Ois., vi, 56; *Colibri à gorge verte de Cayenne* Buffon, Pl. Enl., pl. 671, fig. 1; *Green-throated Hummingbird* Latham, Synopsis, i, pt. 2, 755).—[*Trochilus*] *pectoralis* Latham, Index Orn., i, 1790, 306 (= *T. gramineus* Gmelin).—*Polytmus dominicus* (not *Trochilus dominicus* Gmelin) Léotaud, Ois. Trinidad, 1866, 132.

<sup>c</sup> Except for white femoral tufts.



- ff.* Under parts of body with black confined to chest and upper breast; upper parts more bronzy; smaller (wing averaging 62.5, tail 36.7, culmen 22.9). (Island of Porto Rico, St. Thomas, St. Johns, and Aneгада). . . . . ***Anthracothorax aurulentus***, adult male (p. 470).
- cc.* Under parts partly white.
- d.* Under parts with a median stripe of black, black and bluish green, or bluish green, bordered laterally (on each side) by a stripe of white.
- e.* Median stripe wholly black.
- f.* Smaller (wing averaging 65.2, tail 35.2, culmen 24.1).  
***Anthracothorax nigricollis nigricollis***, female and young (pp. 459, 460).
- ff.* Larger (wing averaging 69.5, tail 37, culmen 27.2).  
***Anthracothorax nigricollis iridescens***, female and young (extralimital).
- ce.* Median stripe only partly black or without black.
- f.* Median stripe black on throat, bluish green on chest and breast.
- g.* Bill longer (culmen 25–31, averaging 28.1).  
***Anthracothorax prevostii prevostii***, female and young (pp. 463, 464).
- gg.* Bill shorter (culmen 22–28, averaging much less than 28).
- h.* Culmen 22.5–28, averaging 25.4.  
***Anthracothorax prevostii gracilirostris***, female and young (p. 465).
- hh.* Culmen 22–23.5, averaging 22.7.  
***Anthracothorax prevostii hendersoni***, female and young (p. 466).
- ff.* Median stripe green on throat, black on chest, breast, and abdomen.  
***Anthracothorax gramineus***, female and young (extralimital).
- ee.* Median stripe wholly bluish green.  
***Anthracothorax veraguensis***, female and young (p. 467).
- dd.* Under parts pale grayish without any black or greenish median stripe.
- e.* Larger (wing averaging 65.3, tail 37.5, culmen 25.6); lateral rectrices extensively chestnut basally; lateral under parts conspicuously spotted with metallic green; green of upper parts less bronzy.  
***Anthracothorax dominicus***, female and young (pp. 468, 469).
- ee.* Smaller (wing averaging 58.1, tail 32.7, culmen 23.6); lateral rectrices with little if any chestnut; lateral under parts with little if any metallic green spotting; green of upper parts more bronzy.  
***Anthracothorax aurulentus***, female and young (pp. 470, 471).
- aa.* Tail steel blue; under parts uniform green. (Island of Porto Rico.)  
***Anthracothorax viridis***, both sexes (p. 472).

## ANTHRACOTHORAX MANGO (Linnæus).

### MANGO HUMMING BIRD.

*Adult male*.—Pileum dull dusky bronze, the feathers narrowly and indistinctly margined with darker; occiput, hindneck, upper back, anterior scapulars, and lesser wing-coverts metallic coppery purple, the feathers grayish dusky at base and with a concealed subterminal band of greenish bronze; lower back, posterior scapulars, rump, and upper tail-coverts dull dusky greenish bronze, more or less tinged with coppery bronze or purplish, the lower back sometimes strongly so; middle pair of rectrices varying from dusky greenish bronze to dull black; remaining rectrices deep chestnut, margined terminally with dark bluish green, dusky bronze-green, or blackish (the outermost rectrix also edged along outer web with the same), the chestnut portion of rectrices glossed with metallic purple, violet, or bluish;

greater wing-coverts dusky bronze or very dark bronze-greenish; remiges dull brownish slate or dusky, the secondaries usually faintly glossed with bronze-greenish; under parts plain velvety black, glossed with bluish green when viewed from behind, the under tail-coverts more strongly glossed with greenish; loreal, rictal, and auricular regions and sides of neck bright metallic purple or reddish purple (aster purple to violet); femoral and lumbar tufts white; bill dull black; iris brown; feet dusky; length (skins), 117-130 (126); wing, 69-77 (73.5); tail, 38.5-44.5 (41.6); culmen, 25-30 (26.8).<sup>a</sup>

*Adult female*.—Similar to the adult male, but coloration decidedly duller (especially the black of under parts), tail less brilliant, and rectrices margined terminally (more or less distinctly) with pale grayish or dull whitish; length (skins), 123-136 (127); wing, 69.5-75 (71.2); tail, 40.5-43.5 (41.7); culmen, 26-29 (27.6).<sup>a</sup>

*Immature?*—Similar to adults, as described above, but chin and throat dull metallic bluish green (viewed from in front), middle rectrices more blackish (less metallic), and outer two or three rectrices (on each side) tipped, more or less, with whitish.<sup>b</sup>

Island of Jamaica, Greater Antilles (Metcalfé Parish; Hope Gardens; Port Antonio; Port Henderson; Kingston; Spanishtown; Priestmans River; Moneague).

[*Trochilus*] *mango* LINNÆUS, Syst. Nat., ed. 10, i, 1758, 128 (based on *Mellivora mango* Albin, Av., iii, 45, pl. 49, fig. 1); ed. 12, i, 1766, 191 (cites *Mellivora avis maxima* Sloane, Nat. Hist. Jam., ii, 305, pl. 264, fig. 3).—GMELIN, Syst. Nat., i, pt. i, 1788, 491.—LATHAM, Index Orn., i, 1790, 307.

*Trochilus mango* LESSON, Index Gen. et Synop. Troch., 1832, p. x, part (Jamaica).

*Lampornis mango* GOSSE, Birds Jam., 1847, 88; Illustr. Birds Jam., 1849, pl. 18.—MARCH, Proc. Ac. Nat. Sci. Phila., 1863, 284.—ELLIOT, Ibis, 1872, 350 (crit.); Classif. and Synop. Troch., 1879, 39.—MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., iv, livr. 2, 1877, 155 (crit.).—RIDGWAY, Proc. U. S. Nat. Mus., iii, 1880, 311.—CORY, Auk, iii, 1886, 349; Birds West Ind., 1889, 144; Cat. West Ind. Birds, 1892, 12, 106, 130.—SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 91.—SCOTT, Auk, ix, 1892, 277.—FIELD, Auk, xi, 1894, 125 (Port Henderson).—BOUCARD, Gen. Hum. Birds, 1895, 327.—LODGE, Ibis, 1896, 497 (habits).

[*Lampornis*] *mango* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 81.—CORY, List Birds West Ind., 1885, 17.—SHARPE, Hand-list, ii, 1900, 118.

*L[ampornis] mango* NEWTON, Handb. Jam., 1881, 108.—HARTERT, Das Tierreich, Troch., 1900, 97.

<sup>a</sup> Ten specimens.

<sup>b</sup> This green-throated plumage was considered by Gould that of the adult female; but, judging from the material examined, I am inclined to agree with Mr. Salvin (Cat. Birds Brit. Mus., xvi, 92) in considering that it represents birds of both sexes in immature dress.

- [*Endora*] *mango* HEINE and REICHENOW, Nom. Mus. Hein. Orn., 1890, 175.  
*Trochilus porphyryrus* SHAW, Nat. Misc., ix, no. 9, May, 1798, pl. 333 ("South America and neighboring islands"); Gen. Zool., viii, 1811, 296.  
 [Anthracothonax.  $\beta$ . *Floresia*] *porphyryrus* REICHENBACH, Aufz. der Colibr., 1854, 11.  
 [Anthracothonax] *porphyryrus* REICHENBACH, Troch. Enum., 1855, 8, pl. 795, figs. 4849, 4850.  
 [Lampornis] *porphyryrus* BONAPARTE, Rev. et Mag. de Zool., 1854, 250.—MULSANT, Ann. Soc. Linn. Lyon, xxii, 1876, 203.  
*Lampornis porphyryrus* GOULD, Mon. Troch., pt. xv, May, 1858 (vol. v, 1861), pl. 81; Introd. Troch., oct. ed., 1861, 67.—SCLATER, Cat. Am. Birds, 1862, 291.—MULSANT and VERREAUX, Classif. Troch., 1866, 24; Hist. Nat. Ois.-Mouch., i, livr. 2, 1874, 163.  
*Lampornis porphyryrus* SCLATER, Proc. Zool. Soc. Lond., 1861, 79.—ALBRECHT, Journ. für Orn., 1862, 201.  
 [Lampornis] *porphyryrus* CABANIS and HEINE, Mus. Hein., iii, 1860, 19.  
 [Polytmus] *porphyryrus* GRAY, Gen. Birds, i, Dec., 1848, 108.  
 [Polytmus] *porphyryrus* GRAY, Hand-list, i, 1869, 126, no. 1589.  
 [Endoxa] *porphyryrus* HEINE, Journ. für Orn., 1863, 179.  
 [Trochilus] *floresii* BOURCIER and MULSANT, Ann. Sci. Phys. et Nat. d'Agric. Lyon, ix, 1846, 327 (Jamaica); Rev. Zool., 1846, 316.  
 [Lampornis] *floresii* BONAPARTE, Consp. Av., i, 1850, 72; Rev. et Mag. de Zool., 1854, 250.

### ANTHRACOTHORAX NIGRICOLLIS NIGRICOLLIS (Vieillot).

#### BLACK-THROATED MANGO.

*Adult male*.—Above metallic bronze-green, darker and duller on pileum, more decidedly bronzy (sometimes pure golden or coppery bronze) on rump; middle pair of rectrices varying from dull greenish bronze to dusky, slightly glossed with bronze or greenish; remaining rectrices deep maroon-chestnut, glossed with metallic purple, and margined terminally with dark metallic greenish blue, or black glossed with bluish or greenish, this extending along edge of outer web of outermost rectrix for more than terminal half (sometimes nearly to base); remiges dusky brownish slate; chin, throat, and median portion of chest, breast, and abdomen plain velvety black, faintly glossed with bluish when viewed from behind; loreal and rectal regions, and thence along each side of the black area of middle under parts as far as flanks, metallic greenish blue or bluish green next to the black, passing outwardly through pure green into yellowish green; under tail-coverts mixed metallic green and blackish; femoral and lumbar tufts white; bill dull black; iris brown; feet dusky; length (skins), 103–129 (113); wing, 61.5–70.5 (66.9); tail, 34–40.5 (37.2); culmen, 21.5–25.5 (23.5).<sup>a</sup>

*Adult female*.—Above similar to the adult male but lateral rectrices with blackish terminal portion more extended, the tip (at least of

<sup>a</sup> Thirty-three specimens.



two or three outermost rectrices), more or less extensively, whitish; median under parts, from chin to anal region, velvety black, this forming a broad stripe, along each side of which extends a broad stripe of white, from base of mandible to thighs, the sides of neck, sides of chest and breast, sides and flanks metallic bronze or bronze-green; under tail-coverts bronze-green centrally, passing into grayish basally, margined terminally or tipped (more or less broadly) with whitish or pale grayish; femoral and lumbar tufts white; bill, etc., as in adult male; length (skins), 103-125 (112); wing, 62.5-67.5 (65.2); tail, 33-37 (35.2); culmen, 22-27 (24.1).<sup>a</sup>

*Young*.—Similar to the adult female, but feathers of upper parts, including wing-coverts, tipped with pale brownish buffy, those of sides and flanks similarly but less distinctly marked, and sometimes with the white along each side of median black stripe of under parts intermixed with light brown.

Panamá (Loma del León; Paraiso; Panamá) and southward through Colombia (Bogotá; Masinga, Bonda, Don Amo, and Sierra Nevada, Santa Marta; Cartagena; Cauca Valley; lower Magdalena; Bucaramanga), Venezuela (Cumanacoa; Maipures; Munduapo; Cariban; Suapuré; Tembladór; Andes de Cumaná; Mérida), British Guiana (Demerara; Roraima; Aunai), Cayenne and Brazil (Mexiana Island; Pará; Santarem; Bahia; Rio de Janeiro; Pernambuco; Santa Clara, Goiaz; Tonantins; Humaytha, Rio Madeira; Teffé; Piquete,

<sup>a</sup> Twenty-three specimens.

| Locality.                                                               | Wing. | Tail. | Ex-<br>posed<br>culmen. |
|-------------------------------------------------------------------------|-------|-------|-------------------------|
| MALES.                                                                  |       |       |                         |
| Five adult males from Panamá.....                                       | 66.5  | 36.7  | 22.8                    |
| Ten adult males from Colombia.....                                      | 66.7  | 36.9  | 23.8                    |
| Five adult males ( <i>A. v. iridescens</i> ) from western Ecuador.....  | 67.2  | 37    | 25.3                    |
| One adult male from eastern Peru.....                                   | 68    | 36    | 22.5                    |
| One adult male from St. Andrews Island.....                             | 70    | 37.5  | .....                   |
| Three adult males from Venezuela.....                                   | 67.5  | 37.2  | 24.7                    |
| Seven adult males from Trinidad.....                                    | 67.4  | 38.6  | 23.6                    |
| Two adult males from British Guiana and Cayenne.....                    | 66    | 36    | 24.5                    |
| Five adult males from eastern Brazil (mostly from Bahia).....           | 66.3  | 37.2  | 22.7                    |
| FEMALES.                                                                |       |       |                         |
| Four adult females from Panamá.....                                     | 64.5  | 34.7  | 22.6                    |
| Six adult females from Colombia.....                                    | 65.1  | 35.2  | 24.7                    |
| Two adult females ( <i>A. v. iridescens</i> ) from western Ecuador..... | 69.5  | 37    | 27.2                    |
| Two adult females from Venezuela.....                                   | 65.5  | 35.5  | 26.2                    |
| Four adult females from Trinidad.....                                   | 65.4  | 34.9  | 24                      |
| Two adult females from Cayenne and British Guiana.....                  | 65.5  | 35.7  | 23.5                    |
| Five adult females from eastern Brazil (Bahia, etc.).....               | 65.5  | 35.2  | 24                      |

São Paulo; Chapada, Matto Grosso) to Paraguay (Lambaré), Bolivia (Moxos; Guarayos), eastern Peru (Pebas; Yurimaguas; Xeberos), and eastern Ecuador (Sarayacu); Trinidad; St. Andrews Island, Caribbean Sea.

(?) *Trochilus violicauda* BODDAERT, Tabl. Pl. Enl., 1783, 41 (based on *Le Colibri à queue violette* de Cayenne Buffon, Pl. Enl., pl. 671, fig. 2).

*Lampornis violicauda* ELLIOT, Ibis, 1872, 351; 1877, 141 (Moxos and Guarayos, Bolivia); Classif. and Synop. Troch., 1879, 38.—LAYARD, Ibis, 1873, 388 (Pará, Brazil; food).—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1875, 235 (Mérida, Venezuela); 1879, 528 (Colombia), 626 (Moxos and Guarayos, Bolivia).—BOUCARD, The Hum. Bird, ii, 1892, 85 (Bogotá, Colombia).—RIDGWAY, Proc. U. S. Nat. Mus., iii, 1880, 310 (specimens in coll. U. S. Nat. Mus.).—SALVIN, Cat. Strickland Coll., 1881, 361; Ibis, 1885, 432 (Roraima, Brit. Guiana, 3,500 ft.); Cat. Birds Brit. Mus., xvi, 1892, 92, part (Lion Hill and Paraiso, Panamá; Cauca Valley and Bogotá, Colombia; Roraima, Brit. Guiana; Mexiana I., Santarém, Pará, Pernambuco, Bahia, etc., Brazil; Trinidad; Cobati, Rio Negro; upper Amazons).—TACZANOWSKI, Orn. du Pérou, i, 1884, 281.—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 277 (Lion Hill and Paraiso, Panamá).—CHAPMAN, Bull. Am. Mus. N. H., vi, 1894, 56 (Trinidad).—PHELPS, Auk, xiv, 1897, 366 (Cumanacoa, Venezuela).—LOAT, Ibis, 1898, 565 (Brit. Guiana).—BANGS, Proc. Biol. Soc. Wash., xii, 1898, 135 (Santa Marta, Colombia); Proc. New Engl. Zool. Club, ii, 1900, 19 (Loma del León, Panamá).—IHERING, Aves de S. Paulo, 1899, 255 (Piquete); Rev. Mus. Paulista, iv, 1900, 72 (descr. nest and eggs); iv, 1900, 159 (Cantogallo and Novo Friburgo, s. Brazil).—STONE, Proc. Ac. Nat. Sci. Phila., 1899, 301, in text (St. Andrews Is., Caribbean Sea).—ALLEN, Bull. Am. Mus. N. H., v, 1893, 122 (Chapada, Matto Grosso); xiii, 1900, 141 (Bonda, etc., Santa Marta).—HAGMAN, Zool. Jahrb., 1907, 34 (Mexiana I.).

[*Lampornis*] *violicauda* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 81.—SHARPE, Hand-list, ii, 1900, 118.

(?)[*Trochilus*] *punctulatus* GMELIN, Syst. Nat., i, pt. i, 1788, 488 ("Nova Hispania").—LATHAM, Index Orn., i, 1790, 306.

(?) *Trochilus punctulatus* VIEILLLOT, Nouv. Dict. d'Hist. Nat., vii, 1817, 358; Tabl. Enc. Méth., 1822, 552.

(?)[*Trochilus*] *albus* GMELIN, Syst. Nat., i, pt. i, 1788, 488.

(?)[*Trochilus*] *nitidus* LATHAM, Index Orn., i, 1790, 305 (new name for *T. albus* Gmelin).

(?) *Trochilus nitidus* VIEILLLOT, Nouv. Dict. d'Hist. Nat., vii, 1817, 354 (cites Ois. Dor., pl. 11).

(?) *Trochilus punctatus* AUDEBERT and VIEILLLOT, Ois. Dorés, i, 1801, 21, pl. 8.—VIEILLLOT, Nouv. Dict. d'Hist. Nat., vii, 1817, 357; Tabl. Enc. Méth., 1822, 550.

(?) *Trochilus fasciatus* SHAW, Gen. Zool., viii, part i, 1812, 303 (Paraguay).

*Trochilus nigricollis* VIEILLLOT, Nouv. Dict. d'Hist. Nat., vii, 1817, 349 (Brazil); Tabl. Enc. Méth., 1822, 553.

*Lampornis nigricollis* BERLEPSCH, Journ. für Orn., 1884, 309 (Bucaramanga, Colombia; crit. nomencl.); 1887, 17 (Lambaré, Paraguay), 120 (Paraguay), 316 (Bogotá; synonymy); 1889, 100 (Tonantins, n. w. Brazil; n. e. Peru), 305 (Yurimaguas, e. Peru); Zeitschr. Orn., 1887, 186 (Bogotá).—SIMON, Mém. Soc. Zool. France, ii, 1889, 219 (San Esteban, Venezuela).—BERLEPSCH

- and IHERING, Zeitschr. Orn., 1885, 152 (crit.).—RIDGWAY, Rep. U. S. Nat. Mus. for 1890 (1891), 377 (monogr.).—BOUCARD, Gen. Hum. Birds, 1895, 331.—KOENIGSWALD, Journ. für Orn., 1896, 370 (São Paulo, s. Brazil).—SIMON and DALMAS, xi, 1901, 215 (Trinidad; Andes de Cumaná, Venezuela).—BERLEPSCH and HARTERT, Novit. Zool., ix, 1902, 87 (Maipures, Munduapo, Caribán, Suapuré, Temblador, and La Pricion, Venezuela).—(?)BERLEPSCH and STOLZMANN, Proc. Zool. Soc. Lond., 1902, 22 (La Mercéd, centr. Peru; crit.).—IHERING, Rev. Mus. Paul., vi, 1904, 331 (Paraguay).
- L[ampornis] nigricollis* HARTERT, Das Tierreich, Troch., 1900, 97.
- Anthracothorax nigricollis* HELLMAYR, Novit. Zool., xiv, 1907, 78 (Teffé, Brazil), 396 (Humaytha, Rio Madeira, Brazil).—BERLEPSCH, Novit. Zool., xv, 1908, 263 (Cayenne).
- Anthracothorax nigricollis nigricollis* HELLMAYR, Novit. Zool., xv, 1908, 77 (Leopoldina, Brazil).
- Trochilus mango* (not of Linnæus) AUDEBERT and VIEILLOT, Ois. Dorés, i, 1801, 20, pl. 7.—TEMMINCK, Cat. Syst., 1807, 81.—VIEILLOT, Nouv. Dict. d'Hist. Nat., vii, 1817, 353.—LESSON, Hist. Nat. Colibr., 1830-31, 58, 62, 64, pls. 13, 13 bis, 14; Index Gen. et Synop. Troch., 1832, p. x.—AUDUBON, Orn. Biog., ii, 1834, 480, pl. 184 ("Key West, Florida"); Synopsis, 1839, 170; Birds Am., oct. ed., iv, 1842, 186, pl. 251.
- T[rochilus] mango* LICHTENSTEIN, Verz. Doubl., 1823, 13 (Brazil).
- [*Lampornis*] *mango* BONAPARTE, Consp. Av., i, 1850, 71; Rev. et Mag. de Zool., 1854, 250.—MULSANT, Ann. Soc. Linn. Lyon, xxii, 1876, 202.
- L[ampornis] mango* SWAINSON, Birds Brazil, etc., "1834-1841," pl. 28.—CABANIS and HEINE, Mus. Hein., iii, 1860, 19 (Brazil).
- Lampornis mango* BONAPARTE, Geog. and Comp. List, 1838, 10.—GOULD, Mon. Troch., pt. xii, Sept., 1856 (vol. ii), pl. 74; Introd. Troch., oct. ed., 1861, 64.—BURMEISTER, Syst. Ueb. Th. Bras., ii, 1856, 331; Journ. für Orn., 1865, 229.—SCLATER, Proc. Zool. Soc. Lond., 1857, 16 (Bogotá, Colombia), 263 (Santarém, lower Amazon); Cat. Am. Birds, 1862, 290 (Trinidad).—BAIRD, Rep. Pacific R. R. Surv., ix, 1858, 130 ("Key West, Florida").—LAWRENCE, Ann. Lyc. N. Y., vii, 1862, 319 (Panamá).—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1864, 365 (Panamá); 1866, 193 (Sarayacu, e. Ecuador); 1867, 584 (Mexiana I.; Cobati, Rio Negro), 752 (Xeberos, e. Peru), 979 (Pebas, e. Peru); 1868, 169 (Venezuela), 628 (Venezuela); 1873, 287 (Sarayacu, Xeberos, and Pebas, e. Peru).—TAYLOR, Ibis, 1864, 91 (Trinidad; habits).—MULSANT and VERREAUX, Classif. Troch., 1866, 24; Hist. Nat. Ois.-Mouch., i, livr. 2, 1874, 155, livr. 3, 1874, pl. 10; iv, livr. 2, 1877, 155 (crit.).—EULER, Journ. für Orn., 1867, 221 (Brazil; descr. nest and eggs).—PELZELN, Orn. Bras., i, Abth., 1868, 28; iv, Abth., 1870, 407.—REINHARDT, Vid. Medd. Nat. For. Kjöb., 1870, 103 (Brazil).—FINSCH, Proc. Zool. Soc. Lond., 1870, 562 (Trinidad).—WYATT, Ibis, 1871, 376 (Bucaramanga, Colombia).—CABANIS, Journ. für Orn., 1874, 225 (Brazil).—BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, footnote.—ALLEN, Bull. Essex Inst., viii, 1876, 80 (Santarém); Bull. Nutt. Orn. Club, v, 1880, 88.—EUDES-DESLONGCHAMPS, Ann. Mus. Caen, i, 1880, 189.
- [*Lampornis*] *mango*? COUES, Key N. Am. Birds, 1872, 184.
- Anthracothorax mango* REICHENBACH, Aufz. der Colibr., 1854, 11; Troch. Enum., 1855, 8, pl. 791, figs. 4839-4841.
- Polytmus mango* LÉOTAUD, Ois. Trinidad, 1866, 131.
- [*Polytmus*] *mango* GRAY, Hand-list, i, 1869, 125, no. 1576.
- Trochilus mango* var. VIEILLOT, Nouv. Dict. d'Hist. Nat., vii, 1817, 353 (cites Ois. Dorés, pl. 7).
- (?) *Trochilus quadricolor* VIEILLOT, Nouv. Dict. d'Hist. Nat., vii, 1817, 353 (Paraguay; based on *Turqui de Bazo* Azara).



- (?) *Trochilus atricapillus* VIEILLOT, Nouv. Dict. d'Hist. Nat., vii, 1817, 354 (Paraguay; based on *del faza negra a lo largo* Azara).
- (?) *Lampornis obscura* BOUCARD, The Hum. Bird, i, no. 4, April 1, 1891, 25 (Brazil; coll. A. Boucard; =melanism?).
- (?) *Lampornis violicauda* var. BOUCARD, Proc. Zool. Soc. Lond., 1879, 178 (=melanism?).

# ANTHRACOTHORAX PREVOSTII PREVOSTII (Lesson).

## PREVOST'S MANGO.

*Adult male*.—Above metallic bronze-green or greenish bronze; middle pair of rectrices dull dusky bronze-green, varying to dull coppery bronze, the other rectrices deep purplish maroon strongly glossed with metallic violet-purple, margined terminally (rather broadly) with black; remiges dusky brownish slate; median portion of chin and throat (broadly) velvety black; sides of chin and throat (narrowly), malar region, lower foreneck, chest, and median portion of breast and abdomen metallic bluish green, the feathers dull black or dusky beneath surface, auricular region, sides of neck, sides of chest and breast, sides, and flanks bronze-green; under tail-coverts dusky, often intermixed with deep purplish chestnut (the latter sometimes prevailing); femoral and lumbar tufts white; bill dull black; iris dark brown; feet dusky; length (skins), 110–120 (115); wing, 63.5–68.5 (66); tail, 34–37 (35.6); culmen, 24–29 (26.2).<sup>a</sup>

*Adult female*.—Above much less bronzy than adult male, often nearly pure metallic green; lateral rectrices with brownish gray and

<sup>a</sup> Twenty-four specimens.

| Locality.                                                                     | Wing. | Tail. | Ex-<br>posed<br>culmen. |
|-------------------------------------------------------------------------------|-------|-------|-------------------------|
| MALES.                                                                        |       |       |                         |
| Ten adult males from Tamaulipas, Vera Cruz, and Oaxaca.....                   | 66.4  | 36    | 26.5                    |
| Two adult males from Yucatan.....                                             | 66.2  | 35.2  | 25.2                    |
| Ten adult males from Cozumel Island.....                                      | 65.4  | 35.2  | 26                      |
| One adult male from British Honduras.....                                     | 66.5  | 35.5  | 26                      |
| One adult male from eastern Guatemala.....                                    | 65.5  | 36    | 27                      |
| Three adult males from Nicaragua ( <i>A. p. gracilirostris</i> ).....         | 66    | 35    | 24.7                    |
| Six adult males from Costa Rica ( <i>A. p. gracilirostris</i> ).....          | 65.9  | 35.4  | 24.3                    |
| Four adult males ( <i>A. p. hendersoni</i> ) from Old Providence Island.....  | 67    | 36.7  | 22.9                    |
| FEMALES.                                                                      |       |       |                         |
| Five adult females from Tamaulipas, Vera Cruz, and Oaxaca.....                | 64.3  | 34.1  | 29.5                    |
| One adult female from Yucatan.....                                            | 66    | 35    | 28                      |
| Four adult females from Cozumel Island.....                                   | 64.9  | 34.9  | 28.2                    |
| One adult female from British Honduras.....                                   | 64    | 34.5  | 28.5                    |
| One adult female from eastern Guatemala.....                                  | 67    | 34    | 25                      |
| One adult female from Chiapas (Palénque).....                                 | 65.5  | 35    | 26.5                    |
| Two adult females from Nicaragua ( <i>A. p. gracilirostris</i> ).....         | 66.5  | 36    | 25.5                    |
| Eight adult females from Costa Rica ( <i>A. p. gracilirostris</i> ).....      | 64.9  | 35.3  | 25.4                    |
| Two adult females ( <i>A. p. hendersoni</i> ) from Old Providence Island..... | 66.2  | 35    | 22.7                    |

dusky usually replacing purplish on basal portion of outer webs, or with the purplish more restricted (on both webs), the tip (broadly on outermost rectrix) abruptly grayish white; primaries dusky brownish slate; median portion of chin and throat velvety black (this sometimes broken or irregular), the median portion of chest and breast metallic bluish green, passing into dusky on median line of abdomen; sides of chin and throat, malar region, and thence posteriorly to thighs, white; sides of neck, sides of chest, sides of breast, sides, and flanks metallic greenish bronze, sometimes washed or intermixed with purplish bronze; under tail-coverts grayish bronzy, tipped or terminally margined with white; femoral and lumbar tufts white; bill, etc., as in adult male; length (skins), 103–121 (114); wing, 62–69 (64.7); tail, 32–38 (34.3); culmen, 25–31 (28.1).<sup>a</sup>

*Immature male and female*.—Similar to the adult female, but chin and upper throat white, and sides of chin and throat (sometimes sides of chest and breast also) spotted or overlaid with chestnut (the feathers white beneath surface).

Southeastern Mexico in States of Tamaulipas (Tampico; Tantina; Alta Aira), Vera Cruz (Córdova; Jalapa; Misantla; Choapám; Catemaco; Tlalcotalpám; Coatzacoalcos; Antigua), Oaxaca (Santa Efigénia; Tehuántepec), Chiapas (Palénque), and Yucatan (La Vega; Chichen-Itza; Labna; between Ticúl and Uxmál; Cozumél, Meco, Mugeris, and Holbox islands), southward through British Honduras (Belize; Half Moon Cay; Isabella; Manatee Lagoon) and Guatemala (Santa Ana, Petén; Lake Petén; Escuintla; Hacienda de la Concepción) to Honduras (San Pedro; Bonaca Island).

*Trochilus prevostii* LESSON, Hist. Nat. Colibr., 1830–31, 87, pl. 24 (locality unknown); Index Gen. et Synop. Troch., 1832, p. xii (Surinam?).—? BOURCIER, Rev. Zool., vi, 1843, 99 ("Caracas").

(?) *T[rochilus] prevostii* BOURCIER and Mulsant, Ann. Soc. d'Agr. Lyon, vi, 1843, 39 ("Caracas").

*P[olytmus] prevostii* GRAY, Gen. Birds, i, Dec., 1848, 108.

[*Polytmus*] *prevostii* GRAY, Hand-list, i, 1869, 125, no. 1577.

[*Lampornis*] *prevosti* BONAPARTE, Consp. Av., i, 1850, 72; Rev. et Mag. de Zool., 1854, 250.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 81, part.—MULSANT, Ann. Soc. Linn. Lyon, xxii, 1876, 203.—SHARPE, Hand-list, ii, 1900, 118, part.

*Lampornis prevosti* GOULD, Mon. Troch., pt. xv, 1858, (vol. ii), pl. 75, part; Introd. Troch., oct. ed., 1861, 65, part.—SCLATER, Proc. Zool. Soc. Lond., 1856, 287 (Mexico); 1859, 367 (Jalapa, Vera Cruz), 385 (Choapám, Vera Cruz).—SCLATER and SALVIN, Ibis, 1859, 127 (Guatemala); Proc. Zool. Soc. Lond., 1870, 837 (Atlantic coast Honduras).—MULSANT and VERREAUX, Classif. Troch., 1866, 24; Hist. Nat. Ois.-Mouch., i, livr. 3, 1874, 160 (Guatemala; Honduras; Mexico); iv, livr. 2, 1877, 156.—SALVIN, Ibis, 1860, 272 (Escuintla, Guatemala); 1864, 380 (Half Moon Cay, Brit. Honduras); 1889,

<sup>a</sup> Fifteen specimens.

- 365 (Meco, Mugerres, Holbox, and Cozumél islands, Yucatan; crit.); Cat. Birds Brit. Mus., xvi, 1892, 98, part (Alta Mira, Tampico, and Tantina, s. Tamaulipas; Misantla, Vera Cruz; Cozumél I., etc., Yucatan; Bonaca I., Honduras; Belize, Brit. Honduras; Santa Ana and Escuintla, Guatemala).—BOUCARD, Notes quelques Troch., 1873, 7 (Córdova and Jalapa, Vera Cruz); Proc. Zool. Soc. Lond., 1883, 451 (Yucatan); Ann. Soc. Linn. Lyon, xx, 1874, 275 (Córdova); Gen. Hum. Birds, 1895, 332, part (excl. syn. *hendersoni* Cory).—LAWRENCE, Bull. U. S. Nat. Mus., no. 4, 1876, 32 (Santa Eligénia, Oaxaca).—ELLIOT, Classif. and Synop. Troch., 1879, 39, part.—STONE, Proc. Ac. Nat. Sci. Phila., 1890, 207 (between Ticúl and Uxmál and at Labna, Yucatan).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 278, part (localities in Tamaulipas, Oaxaca, Yucatan, and Brit. Honduras; Uvero, etc., Vera Cruz; Hacienda de la Concepción, etc., Guatemala; San Pedro, etc., Honduras).—CHAPMAN, Bull. Am. Mus. N. H., viii, 1896, 284 (Chichen-Itza, Yucatan).—LANTZ, Trans. Kansas Ac. Sci. for 1896-97 (1899), 221, part (Isabella, Brit. Honduras).
- L[ampornis] prevosti* RIDGWAY, Rep. U. S. Nat. Mus. for 1890 (1891), 377, part.—SIMON, Rev. Franç. d'Orn., no. 1, 1909, 9, 10, in text, part (crit.).
- [Anthracothonax] prevostii* REICHENBACH, Aufz. der Colibr., 1854, II; Troch. Enum., 1855, 8, pl. 792, figs. 4842-4844.
- A[nthracothonax] p[revosti] prevosti* RIDGWAY, Proc. Biol. Soc. Wash., xxiii, April 19, 1910, 55, in text.
- Lampornis thalassinus* RIDGWAY, Proc. Biol. Soc. Wash., iii, Feb. 26, 1885, 3 (Cozumél Island, Yucatan; coll. U. S. Nat. Mus.).
- Lampornis prevosti thalassinus* RIDGWAY, Proc. U. S. Nat. Mus., viii, no. 36, Oct. 17, 1885, 573 (Cozumél; descr.; crit.).
- Lampornis mango* (not *Trochilus mango* Linnæus) D'OCA, La Naturaleza, iii, 1875, 62; Troq. de Mex., 1875, 25, pl. (4), fig. 16.—SANCHEZ, Anal. Mus. Nac. Mex., i, 1877, 96.
- L[ampornis] prevosti (typicus)* HARTERT, Das Tierreich, Troch., 1900, 98, part.

### ANTHRACOTHORAX PREVOSTII GRACILIROSTRIS Ridgway.

#### SLENDER-BILLED MANGO.

Similar to *A. p. prevostii*, but with decidedly shorter and more slender bill; upper parts and sides decidedly less bronzy or golden green, and under tail-coverts averaging darker.

*Adult male*.—Length (skins), 105-119 (110); wing, 64-68 (65.9); tail, 34.5-37 (35.3); culmen, 23.5-25.5 (24.4).<sup>a</sup>

*Adult female*.—Length (skins), 105-118 (111); wing, 63.5-69 (65.2); tail, 33-38 (35.4); culmen, 22.5-28 (25.4).<sup>b</sup>

Nicaragua (Los Sábalos; San Emilis, Lake Nicaragua; San Carlos; Grenada; Matagalpa?) and Costa Rica (Bolsón; Bebedero; San Pedro; Rio Turubales); Venezuela? <sup>c</sup>

*Lampornis prevostii* (not *Trochilus prevostii* Lesson) LAWRENCE, Ann. Lyc. N. Y., ix, 1868, 121 (Gulf of Nicoya, Costa Rica).—FRANTZIUS, Journ. für Orn., 1869, 315 (Costa Rica).

<sup>a</sup> Nine specimens.

<sup>b</sup> Ten specimens.

<sup>c</sup> See Salvin and Godman, Biol. Centr.-Am., Aves, ii, 1892, 279.



- [*Lampornis*] *prevosti* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 81, part (Costa Rica).—SHARPE, Hand-list, ii, 1900, 118, part (Costa Rica).
- Lampornis prevosti* ELLIOT, Classif. and Synop. Troch., 1879, 39, part (Costa Rica).—ZELEDÓN, Cat. Aves de Costa Rica, 1882, 20.—SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 98, part (Bebedero, Costa Rica).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 278, part (Bebedero).—RICHMOND, Proc. U. S. Nat. Mus., xvi, 1893, 517 (Los Sábalos and San Carlos, Nicaragua).—BOUCARD, Gen. Hum. Birds, 1895, 332, part.—LANTZ, Trans. Kansas Ac. Sci. for 1896-97 (1899), 221, part (Grenada, Nicaragua).
- [*Lampornis*] *prevosti* RIDGWAY, Rep. U. S. Nat. Mus. for 1890 (1891), 377, part (Costa Rica).—SIMON, Rev. Franç. d'Orn., no. 1, 1909, 9, 10, in text, part (Costa Rica; crit.).
- (?) *Lampornis violacauda* (not *Trochilus violicauda* Boddaert) LANTZ, Trans. Kansas Ac. Sci. for 1896-97 (1899), 221 (Grenada, Nicaragua).
- [*Lampornis*] *prevosti (typicus)* HARTERT, Das Tierreich, Troch., 1900, 98, part.
- Anthracothonax prevosti prevosti* CARRIKER, Ann. Carnegie Mus., vi, 1910, 538 (Costa Rica).
- Anthracothonax prevosti gracilirostris* RIDGWAY, Proc. Biol. Soc. Wash., xxiii, April 19, 1910, 55 (Bolsón, Costa Rica; coll. E. A. and O. Bangs).

### ANTHRACOTHORAX PREVOSTII HENDERSONI (Cory).

#### HENDERSON'S MANGO.

Similar to *A. p. gracilirostris* in smallness of bill, but upper parts, sides, and flanks conspicuously more bronzy (greenish bronze to almost golden bronze) and green color bordering black throat-stripe much less bluish.

*Adult male*.—Length (skins), 104-112 (109); wing, 65.5-68.5 (67) tail, 35.5-38 (36.7); culmen, 22-23.5 (22.9).<sup>a</sup>

*Adult female*.—Length (skins), 106-107 (106.5); wing, 63.5-69 (66.2); tail, 33-37 (35); culmen, 22-23.5 (22.7).<sup>b</sup>

Island of Old Providence, Caribbean Sea.

*Lampornis hendersoni* CORY, Descr. Six New Sp. B. Isl. Old Providence and St. Andrews, May 27, 1887, 1; Auk, iv, July, 1887, 177, 180 (Old Providence I., Caribbean Sea; coll. C. B. Cory).—SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 99.—SALVIN and GODMAN, Biol. Centr.-Am., ii, 1892, 279.—BOUCARD, The Hum. Bird, ii, 1892, 85.—SIMON, Revue Franç. d'Orn., no. 1, 1909, 9 (crit.).

[*Lampornis*] *hendersoni* SHARPE, Hand-list, ii, 1900, 118.

[*Lampornis*] *prevosti hendersoni* RIDGWAY, Rep. U. S. Nat. Mus. for 1890 (1891), 377 (diagnosis, etc.).—HARTERT, Das Tierreich, Troch., 1900, 98 (monogr.).

*Lampornis prevosti* (not *Trochilus prevostii* Lesson) BOUCARD, Gen. Hum. Birds, 1895, 332, part (Old Providence).

*A[nthracothonax] p[revosti] hendersoni* RIDGWAY, Proc. Biol. Soc. Wash., xxiii, April 19, 1910, 55, in text.

<sup>a</sup> Four specimens.

<sup>b</sup> Two specimens.

## ANTHRACOTHORAX VERAGUENSIS Reichenbach.

## VERAGUAN MANGO.

Similar to *A. prevostii*, but adult male with chin and throat wholly bright metallic green.

*Adult male*.—Above metallic bronze, greenish bronze, or bronze-green, the middle pair of rectrices usually more coppery bronze; other rectrices rich purplish maroon, glossed with violet-purple, margined terminally with purplish or bluish black, this extending along edge of outer web for terminal half (more or less); remiges brownish slate or dusky; loreal and malar regions, chin, and throat brilliant metallic yellowish emerald green varying to more golden green; chest and median portion of breast and abdomen duller and more bluish green, the lateral under parts metallic bronze or bronze-green; under tail-coverts blackish or dusky, more or less glossed with greenish; femoral and lumbar tufts white; bill dull black; iris dark brown; feet dusky; length (skins), 99–111 (105); wing, 64.5–72 (67.1); tail, 34–37.5 (35.3); exposed culmen, 23.5–26.5 (24.7).<sup>a</sup>

*Adult female*.—Above similar in color to the adult male; chin and a broad stripe extending therefrom along sides of throat and chest to anal region, white, these two white stripes inclosing one of metallic bluish green, the feathers of which are dusky beneath the surface; sides of neck and thence to flanks metallic bronze-green; under tail-coverts light bronze-green narrowly tipped or terminally margined with white, the longer ones with an indistinct subterminal bar of dusky; lateral rectrices broadly tipped with white and crossed by a broad band of glossy blue-black, the remaining portion chestnut glossed with metallic purple; length (skin), 111; wing, 65; tail, 36.5; culmen (tip of maxilla broken off).<sup>b</sup>

Panamá (Volcán de Chiriquí; David; Calobre; Cordillera del Chucu; Agua Dulce; Natá, Coclé; Panamá); Costa Rica?

[*Anthracothonax*, *r. Sericotes*] *veraguensis* REICHENBACH, Aufz. der Colibr., 1854, 11 (Veragua; nomen nudum).

[*Anthracothonax*] *veraguensis* REICHENBACH, Troch. Enum., 1855, 9, pl. 794, fig. 4848 (Veragua).

[*Lampornis*] *veraguensis* BONAPARTE, Rev. et Mag. de Zool., 1854, 250.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 81.—MULSANT, Ann. Soc. Linn. Lyon, xxii, 1876, 202.—SHARPE, Hand-list, ii, 1900, 118.

<sup>a</sup> Six specimens.

| Locality.                           | Wing. | Tail. | Ex-<br>posed<br>culmen. |
|-------------------------------------|-------|-------|-------------------------|
| MALES.                              |       |       |                         |
| Six adult males from Panamá.....    | 66.2  | 35    | 24.9                    |
| One adult male from Costa Rica..... | 72    | 37.5  | 23.5                    |

<sup>b</sup> One specimen.

*Lampornis veraguensis* SCLATER, Proc. Zool. Soc. Lond., 1856, 140 (David, Panama); Cat. Am. Birds, 1862, 291.—GOULD, Mon. Troch., pt. xv, May, 1858 (vol. ii, 1861), pl. 76 (Volcan de Chiriquí, Panamá); Introd. Troch., oct. ed., 1861, 65.—MULSANT and VERREAUX, Classif. Troch., 1866, 24; Hist. Nat. Ois.-Mouch., i, livr. 2, 1874, 146; iv, livr. 2, 1877, 153.—LAWRENCE, Ann. Lyc. N. Y., viii, 1867, 177 (David); ix, 1868, 121 (Costa Rica; error?).—SALVIN, Proc. Zool. Soc. Lond., 1867, 153 (David); 1870, 207 (Cordillera del Chucu and Calobre); Cat. Birds Brit. Mus., xvi, 1892, 99.—FRANTZIUS, Journ. für Orn., 1869, 315 (Costa Rica; error?).—ELLIOT, Classif. Troch., 1879, 40.—ZELEDÓN, Cat. Aves de Costa Rica, 1882, 20; Anal. Mus. Nac. Costa Rica, i, 1887, 121.—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 280 (Agua Dulce, etc., Panamá).—BOUCARD, The Hum. Bird, ii, 1892, 85; Gen. Hum. Birds, 1895, 333 (Colón, etc.).

[*Lampornis*] *veraguensis* CABANIS and HEINE, Mus. Hein., iii, 1860, 18.—RIDGWAY, Rep. U. S. Nat. Mus. for 1890 (1891), 377 (diagnosis, etc.).—HARTERT, Das Tierreich, Troch., 1890, 99 (monogr.).

[*Polytmus*] *veraguensis* GRAY, Hand-list, i, 1869, 125, no. 1578.

### ANTHRACOTHORAX DOMINICUS (Linnaeus).

#### HAITIAN MANGO.

*Adult male*.—Above dark, rather dull, metallic bronze-green, sometimes intermixed with metallic grass green; middle pair of rectrices dull metallic bronze, coppery bronze or violaceous-black; <sup>a</sup> remaining rectrices broadly margined terminally with violaceous-black, this extending along the edge of each web for (approximately) the terminal half, on the outer web of lateral rectrix to or near base; remiges dusky brownish slate or dull violaceous-black; chin and throat metallic bronze, or brassy bronze, usually passing laterally and posteriorly into a more greenish hue, or uniform greenish bronze or bronze-green; chest, breast, and abdomen—sometimes entire under parts of body—opaque velvety black, sometimes duller or more sooty on lower abdomen; sides and flanks sometimes (narrowly) dark metallic green or bronze-green; under tail-coverts dusky or dark sooty basally, darker and faintly glossed with bronze or greenish terminally, sometimes wholly violaceous black; femoral and lumbar tufts white; bill dull black; iris brown; feet dusky; length (skins), 115–124 (119); wing, 65.5–70.5 (67.9); tail, 40–46 (42.9); culmen, 23–25 (23.8).<sup>b</sup>

*Adult female*.—Above rather bright bronze-green or greenish bronze; middle pair of rectrices rather dull dusky greenish bronze or bronze-green; other rectrices with basal half or more chestnut-rufous, glossed with purple, the remainder (approximately the terminal third) first black, then white, the latter in form of a terminal spot, largest on outermost rectrix; remiges dusky brownish slate;

<sup>a</sup> Salvin (Cat. Birds Brit. Mus., xvi, 97) describes the color of the middle rectrices as "steel blue;" but I have never seen a specimen in which the color even distantly approached that hue!

<sup>b</sup> Ten specimens.



under parts very pale gray, passing into white, or grayish white, on malar region, the sides and flanks faintly washed with bronze; bill, etc., as in adult male; length (skins), 112–116 (114); wing, 64–67 (65.3); tail, 35.5–39 (37.5); culmen, 24–27 (25.6).<sup>a</sup>

Island of Haiti, Greater Antilles (Port au Prince, La Vega, and Le Coup, Haiti; Samaná, Santo Domingo, Puerto Plata, La Camita, and Sanchez, Santo Domingo).

[*Trochilus dominicus* LINNÆUS, Syst. Nat., ed. 12, i, 1766, 191 (based on *Polytmus dominicensis* Brisson, Orn., iii, 672, pl. 35, fig. 1).—GMELIN, Syst. Nat., i, 1788, 489.—LATHAM, Index Orn., i, 1790, 309.

*Trochilus dominicus* AUDEBERT and VIEILLOT, Ois. Dorés, i, 1802, 128.—VIEILLOT, Nouv. Dict. d'Hist. Nat., vii, 1817, 358.

[*Lampornis dominicus* BONAPARTE, Consp. Av., i, 1850, 71; Rev. et Mag. de Zool., 1854, 250.—SHARPE, Hand-list, ii, 1900, 119.

*Lampornis dominicus* ELLIOT, Ibis, 1872, 349, part (Santo Domingo; synonymy; crit.); Classif. and Synop. Troch., 1879, 41, part (Santo Domingo).—MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., iv, livr. 2, 1877, 154.—CORY, Birds Haiti and St. Dom., 1885, 90, pl. (22), figs. 7, 8; Auk, iii, 1886, 348, part; Birds West Ind., 1889, 143, part; Cat. West Ind. Birds, 1892, 12, 106, part (Haiti).—SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 96 (Samaná and Puerto Plata, Santo Domingo; Port au Prince, Haiti).—BOUCARD, Gen. Hum. Birds, 1895, 328.—CHERRIE, Contr. Orn. St. Dom., 1896, 18.—CHRISTY, Ibis, 1897, 329 (Samaná and La Vega, Santo Domingo).

L[*ampornis*] *dominicus* HARTERT, Das Tierreich, Troch., 1900, 99 (monogr.).

[*Anthracothonax*, *δ. Hypophania*] *dominica* REICHENBACH, Aufz. der Colibr., 1854, 11.

[*Anthracothonax*] *dominicus* REICHENBACH, Troch. Enum., 1855, 9, pl. 793, figs. 4845, 4846.

[*Trochilus*] *margaritaceus* GMELIN, Syst. Nat., i, pt. 1, 1788, 490 (based on *Plastron blanc* Buffon, Hist. Nat. Ois., vi, 61; *Colibri de St. Domingue* Buffon, Pl. Enl., pl. 680, fig. 1; Grey-necked Humming-bird Latham, Synop., i, pt. 2, 761).—LATHAM, Index Orn., i, 1790, 308.

*Trochilus margaritaceus* VIEILLOT, Nouv. Dict. d'Hist. Nat., vii, 1817, 353.

P[*olytmus*] *margaritaceus* GRAY, Gen. Birds, i, Dec., 1848, 108.

*Polytmus aurulentus* (not *Trochilus aurulentus* Audebert and Vieillot) VIEILLOT, Ois. Am. Sept., ii, 1807, 72.

*Trochilus aurulentus* (not of Audebert and Vieillot) SHAW, Gen. Zool., viii, 1811, 306.—BRYANT, Proc. Bost. Soc. N. H., xi, 1867, 95 (Santo Domingo).

T[*rochilus*] *aurulentus* VIEILLOT, Tabl. Enc. Méth., ii, 1822, 555.

[*Trochilus*] *aurulentus* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 81, part (Haiti).

*Margarochrysis aurulenta* REICHENBACH, Aufz. der Colibr., 1854, 11; Troch. Enum., 1855, 8, pl. 784, figs. 4822, 4823.

[*Eulampis*] *aurulentus* BONAPARTE, Rev. et Mag. de Zool., 1854, 250.

*Lampornis aurulenta* SALLÉ, Proc. Zool. Soc. Lond., 1857, 233 (Santo Domingo).

<sup>a</sup> Ten specimens.

*Lampornis aurulentus* GOULD, Mon. Troch., pt. xv, 1858 (vol. ii), pl. 79; Introd. Troch., oct. ed., 1861, 66.—MULSANT and VERREAUX, Classif. Troch., 1866, 14; Hist. Nat. Ois.-Mouch., i, livr. 2, 1874, 152, part (Santo Domingo).—CORY, Bull. Nutt. Orn. Club, vi, 1881, 153 (Haiti, above 1,000 ft.).—TRISTRAM, Ibis, 1884, 168 (Santo Domingo).

[*Lampornis*] *aurulentus* MULSANT, Ann. Soc. Linn. Lyon, xxii, 1876, 202, part (Santo Domingo).

#### ANTHRACOTHORAX AURULENTUS (Audebert and Vieillot).

##### PORTO RICAN MANGO.

Similar to *A. dominicus* but decidedly smaller; adult male with black of under parts confined to chest and breast, and middle rectrices usually much more coppery bronze; adult female with basal portion of lateral rectrices light grayish, or partly so, instead of more than basal half wholly chestnut-rufous,<sup>a</sup> black of subterminal portion brightly glossed with bluish green, and under parts more extensively and uniformly grayish, the sides without green spotting or intermixture.

*Adult male*.—Above metallic greenish bronze, golden bronze, or (more rarely) coppery bronze or bronze-green, the middle rectrices dull blackish bronze to bright coppery bronze; tail (except middle rectrices) dark violet-chestnut or maroon-violet glossed with metallic violet-purple, the rectrices broadly margined terminally with glossy steel-blue; remiges dull slate-blackish or dusky faintly glossed with violet-bluish; chin and throat metallic greenish bronze to golden bronze; chest and upper breast opaque velvety black, passing into dull brownish gray on sides, flanks, and lower abdomen; under tail-coverts dusky brownish gray, usually more blackish subterminally, usually margined (more or less distinctly) with paler, and faintly glossed with violet; conspicuous femoral and lumbar tufts white; bill black; iris dark brown; feet blackish; length (skins), 105–111 (108); wing, 59–65 (62.5); tail, 32–39 (36.7); culmen, 21–25 (22.9).<sup>b</sup>

*Adult female*.—Above metallic bronze-green to golden bronze, usually much duller on forehead and crown; middle rectrices dull bronze-green to bright bronze (rarely coppery bronze), usually darker (sometimes blackish) terminally; other rectrices brownish gray (rarely partly chestnut on inner webs) basally, steel blue subterminally, and tipped with white (broadly on lateral rectrices); remiges slate-blackish or dusky, faintly glossed with violet-bluish; under parts pale brownish gray, paler (sometimes dull white) on chin and throat, passing into white on abdomen and anal region, the sides sometimes slightly intermixed with metallic bronze or bronze-green; under tail-coverts pale gray centrally, margined with white; bill, etc., as in

<sup>a</sup> A few specimens have the basal half of the lateral rectrices mostly chestnut-rufous, but these I think are immature males; one of them certainly is, the collector having taken pains to emphasize the determination of sex.

<sup>b</sup> Seventeen specimens.

adult male; length (skins), 99–110 (104);<sup>a</sup> wing, 54–63 (58.1); tail, 31.5–34 (32.7); culmen, 21–25.5 (23.6).<sup>b</sup>

*Immature male*.—Similar to the adult female, but basal portion of lateral rectrices mostly chestnut (glossed with violet-purple), and throat and chest showing, along median line, more or less of the metallic bronze or bronze-green and black of the adult plumage.

Islands of Porto Rico (Cataño; Luquillo; Aguadilla; Arroyo; Ponce; Hucares; Coamo; Añasco; El Yunque), Culebra, St. Thomas, St. Johns, and Anegada, Greater Antilles.

*Trochilus aurulentus* AUDEBERT and VIEILLOT, Ois. Dorés, i, 1801, 29, 31, pls. 12, 13 (Porto Rico; coll. Paris Mus.).—VIEILLOT, Nouv. Dict. d'Hist. Nat., vii, 1817, 350 (Porto Rico).—LESSON, Hist. Nat. Colibr., 1830–31, 68, 71, 73, 74, pls. 16–19 (Porto Rico); Index Gen. et Synop. Troch., 1832, p. xi, (Porto Rico).

*Lampornis aurulentus* CASSIN, Proc. Ac. Nat. Sci. Phila., 1860, 377 (St. Thomas).—MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., i, livr. 2, 1874, 152, part (St. Thomas; Porto Rico).—GUNDLACH, Journ. für Orn., 1878, 181 (Porto Rico; crit.); Anal. Soc. Esp. Hist. Nat., vii, 1878, 233 (Porto Rico).

[*Lampornis*] *aurulentus* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 81, part (Porto Rico; St. Thomas).—GUNDLACH, Journ. für Orn., 1874, 312 (Porto Rico); 1878, 160 (Porto Rico).—MULSANT, Ann. Soc. Linn. Lyon, xxii, 1876, 202, part (St. Thomas; Porto Rico).

*Trochilus (Lampornis) aurulentus* SUNDEVALL, Oefv. K. Vet. Ak. Förh., 1869, 600 (Porto Rico).

*Lampornis virginalis* GOULD, Mon. Troch., ii, pt. xxiv, Sept., 1861, pl. 80 (St. Thomas, Greater Antilles; coll. J. Gould); Introd. Troch., oct. ed., 1861, 66.—SCLATER, Cat. Am. Birds, 1862, 291.—CORY, Cat. West Ind. Birds, 1892, 12, 108, 143 (Anegada; Porto Rico; St. Thomas?).—SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 97 (Porto Rico; St. Thomas).—BOUCARD, Gen. Hum. Birds, 1895, 329 (St. Thomas).—BOWDISH, Auk, xix, 1902, 366 (Porto Rico; habits).

[*Lampornis aurulentus*] var. *virginalis* MULSANT, Ann. Soc. Linn. Lyon, n. s., xxii, 1876, 202 (St. Thomas).

[*Lampornis*] *virginalis* HARTERT, Das Tierreich, Troch., 1900, 99 (monogr.).

[*Lampornis*] *virginalis* SHARPE, Hand-list, ii, 1900, 119.

[*Polytmus*] *virginalis* GRAY, Hand-list, i, 1869, 126, no. 1583.

*Lampornis ellioti* CORY, Auk, vii, Oct., 1890, 374 (Anegada I., W. I.; coll. C. B. Cory).—BOUCARD, Gen. Hum. Birds, 1895, 329 (Anegada).

<sup>a</sup> Two specimens.

<sup>b</sup> Eleven specimens.

| Locality.                                | Wing. | Tail. | Ex-<br>posed<br>culmen. |
|------------------------------------------|-------|-------|-------------------------|
| MALES.                                   |       |       |                         |
| Ten adult males from Porto Rico.....     | 63    | 36.5  | 23.5                    |
| One adult male from Culebra Island.....  | 62    | 36    | 24                      |
| Four adult males from St. Thomas.....    | 62.1  | 37.3  | 22.2                    |
| Two adult males from Anegada.....        | 60.7  | 36.7  | 22.9                    |
| FEMALES.                                 |       |       |                         |
| Six adult females from Porto Rico.....   | 58.2  | 32.6  | 24.3                    |
| Three adult females from St. Thomas..... | 58.8  | 32.7  | 23.3                    |
| Two adult females from St. Johns.....    | 56.5  | 33.2  | 23.2                    |



*Lampornis dominicus* (not *Trochilus dominicus* Linnæus) ELLIOT, Ibis, 1872, 349, part (St. Thomas; Porto Rico; synonym.; crit.); Classif. and Synop. Troch., 1879, 41, part (Porto Rico; St. Thomas).

(?) *Trochilus mango* (not of Linnæus) LESSON, Hist. Nat. Colibr., 1830-31, 66, pl. 15 (Porto Rico).

[*Lampornis*] *margaritaceus* BONAPARTE, Consp. Av., i, 1850, 72 (Porto Rico).

*Lampornis viridis* (not *Trochilus viridis* Audebert and Vieillot) GOULD, Mon. Troch., pt. xxi, 1861 (vol. ii), pl. 78, part (supposed female!); Introd. Troch., oct. ed., 1861, 66, part.—ELLIOT, Ibis, 1872, 348, part (supposed female!); Classif. and Synop. Troch., 1879, 40, part (supposed female!).—CORY, Auk, iii, 1886, 349, part (supposed female!); Birds West Ind., 1889, 144, part (supposed female!); Cat. West Ind. Birds, 1892, 12, 106, 132.—SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 100, part (supposed female!).—BOUCARD, Gen. Hum. Birds, 1895, 334, part (supposed female!).

[*Lampornis*] *viridis* HARTERT, Das Tierreich, Troch., 1900, 99, part (supposed female!).

### ANTHRACOTHORAX VIRIDIS (Audebert and Vieillot).

#### GREEN MANGO.

*Adults (sexes alike).*<sup>a</sup>—Above metallic green, bronze-green, or (rarely) bronze, duller on pileum, the lower rump and upper tail-coverts purer green (metallic grass green or sea green); tail metallic blue-black or dark steel blue, the lateral rectrices sometimes very narrowly margined at tip with grayish or grayish white; remiges dusky brownish slate, very faintly glossed with violet; under parts metallic bluish green (french green or between grass green and sea green), the under tail-coverts sometimes narrowly margined terminally with whitish; femoral and lumbar tufts white (the latter small and concealed); bill black; iris dark brown; feet dusky.

*Young.*—Not materially different in coloration from adults, but some specimens, at least, have the feathers of the under parts narrowly and very indistinctly margined terminally with pale grayish brown, or else have the green of the anterior under parts darker and duller.<sup>b</sup>

*Adult male.*—Length (skins), 107-116 (111); wing, 60-67 (63.9); tail, 35.5-38.5 (37); culmen, 23-25 (24.2).<sup>c</sup>

*Adult female.*—Length (skins), 104-117 (112); wing, 58.5-63 (60.1); tail, 33.5-37 (35.1); culmen, 25-27 (25.9).<sup>d</sup>

Island of Porto Rico, Greater Antilles (El Yunque; Adjuntas; Utuado; Lares; Mayagüez).

<sup>a</sup> Not only have Gould (Monog. Troch., ii) but also Elliot, Cory, Salvin (Cat. Birds Brit. Mus., xvi, 100), and Hartert (Tierreich, Aves, Lief. 9, 100) described the adult female of this species as being pale gray beneath. Undoubtedly they are wrong, for all the specimens sexed as female in the U. S. National Museum (one of them with the determination of sex emphasized) are precisely like adult males in coloration, and even a young bird which had not yet left the nest (a male, however) is not appreciably different! Numerous specimens in the U. S. National Museum corresponding with the descriptions of the alleged female of *A. viridis* by the authors mentioned undoubtedly belong to *A. aurulentus*, the adult female of which has little if any chestnut or rufous on the rectrices.

<sup>b</sup> A nestling (determined to be a male by dissection) is in this plumage.

<sup>c</sup> Ten specimens.

<sup>d</sup> Four specimens.

*Trochilus viridis* AUDEBERT and VIEILLOT, Ois. Dorés, i, 1801, 34, pl. 15 ("îles de l'Amérique Septentrionale").—VIEILLOT, Nouv. Dict. d'Hist. Nat., vii, 1817, 354 ("Guyane;" "la Trinité"), 357 (Porto Rico; "St. Domingo").—TEMMINCK, Cat. Syst., 1807, 81, 84.—LESSON, Hist. Nat. Colibr., 1830-31, 50, pl. 11; Index Gen. et Synop. Troch., 1832, p. x.—SUNDEVALL, Æfv. k. Vet.-Ak. Förh., 1869, 600.

*T[rochilus] viridis* VIEILLOT, Tabl. Enc. Méth., i, 1822, 551.

[*Lampornis*] *viridis* BONAPARTE, Consp. Av., i, 1850, 71.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 81.—CORY, List Birds West Ind., 1885, 17.—SHARPE, Hand-list, ii, 1900, 119.

*Lampornis viridis* GOULD, Mon. Troch., pt. xxi, 1861 (vol. ii), pl. 78, part (male only!); Introd. Troch., oct. ed., 1861, 66.—MULSANT and VERREAUX, Classif. Troch., 1866, 24; Hist. Nat. Ois.-Mouch., i, livr. 3, 1874, 172 (Porto Rico; "St. Thomas").—ELLIOT, Ibis, 1872, 348, part (male only; synon.; crit.); Classif. and Synop. Troch., 1879, 40, part (male only).—GUNDLACH, Journ. für Orn., 1878, 160, 180 (Porto Rico; crit.); 1874, 312 (Porto Rico); Anal. Soc. Esp. Hist. Nat., vii, 1878, 222.—CORY, Auk, iii, 1886, 349, part (male only!); Birds West Ind., 1889, 144, part (male only!); Cat. West Ind. Birds 1892, 12, 106, 132.—SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 100, part (male only!; Porto Rico; St. Thomas).—BOUCARD, Gen. Hum. Birds, 1895, 334, part (male only!; Porto Rico).

*L[ampornis] viridis* HARTERT, Das Tierreich, Troch., 1900, 99, part (male only!).

[*Agyrtia*, *δ*. *Chalybura*] *viridis* REICHENBACH, Aufz. der Colibr., 1854, 10.

[*Agyrtia*] *viridis* REICHENBACH, Troch. Enum., 1855, 7, pl. 765, figs. 4771, 4772.

[*Chalybura*] *viridis* MULSANT, Ann. Soc. Linn. Lyon, xxii, 1876, 203.

*Chalybura (Lampornis) viridis* MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., iv, livr. 2, 1878, 157.

[*Polytmus*] *viridis* GRAY, Hand-list, i, 1869, 125, no. 1579.

### Genus SERICOTES Reichenbach.

[*Anthracothorax*] *γ*. *Sericotes* REICHENBACH, Aufz. der Colibr., 1854, 11. (Type, *Trochilus holosericeus* Linnaeus.)

Rather large Trochilidae (length about 100-120 mm.) very closely related to *Eulampis*, but differing in more naked tarsi, rounded, instead of emarginate, tail and very different coloration, the remiges nonmetallic, and general coloration green, the upper tail-coverts blue and a blue or violet patch on chest.

Bill longer than head, rather stout, nearly terete but broader than deep at base, distinctly decurved; culmen rounded but basally contracted into a narrow ridge; terminal portion of maxillary tomium minutely serrate; mandible with a broad longitudinal median groove. Nasal operculum narrow, concealed by dense appressed frontal feathering, which extends to or slightly beyond anterior end of nostril, forming a short and narrow point or antia on each side of mesorhinium. Tarsus naked except for upper frontal portion; middle and inner toes about equal in length, the outer slightly shorter, the hallux shorter than outer toe. Wing about three times as long as exposed culmen, the outermost primary longest. Tail decidedly more than half as long as wing, slightly but distinctly rounded, the rectrices broad, with nearly truncate tip, the lateral rectrices strongly incurved.

*Coloration*.—General color green (brighter below), but this relieved by a blue or violet jugular patch, the tail-coverts also blue or greenish blue; tail blue-black or violet-black. Sexes alike.

*Range*.—Lesser Antilles and adjacent small islands of the Greater Antilles (St. Thomas, Tórtola, Virgin Gorda, Anegada, and St. Croix); also island of Tobago. (Monotypic.)

**SERICOTES HOLOSERICEUS HOLOSERICEUS (Linnæus).**

**GREEN CARIB.**

*Adult male*.—Above metallic-green or bronze-green (often suffused with bronze or coppery bronze), passing into bluish-green (sometimes into greenish blue or, rarely, violet-olive) on upper tail-coverts; tail slightly glossy blue-black (the middle rectrices sometimes more greenish), the under surface more violaceous-black, tipped with blue-black or dark steel blue; remiges dusky, faintly glossed with violaceous, the inner secondaries more strongly glossed with greenish; malar region, chin, throat, and foreneck bright metallic yellowish green (apple green to light grass green), passing on sides of chest into a more bluish green and this on center of chest into blue or greenish blue, forming a more or less well-defined patch; under parts of body black, glossed, more or less distinctly, with bluish green, green, or bronzy; under tail-coverts bright metallic green or bluish green, with a subterminal area of blue or violet-blue; femoral and lumbar tufts white; bill dull black; iris dark brown; feet dusky; length (skins), 99–121 (111); wing, 57–63 (61); tail, 31.5–36.5 (33.8); culmen, 20–26 (21.9).<sup>a</sup>

<sup>a</sup> Thirty-three specimens.

| Locality.                                  | Wing. | Tail. | Ex-<br>posed<br>culmen. |
|--------------------------------------------|-------|-------|-------------------------|
| MALES.                                     |       |       |                         |
| One adult male from St. Thomas.....        | 60.5  | 34    | 21.5                    |
| Two adult males from St. Johns.....        | 60.7  | 32.5  | 22.2                    |
| One adult male from St. Eustatius.....     | 59.5  | 33.5  | .....                   |
| One adult male from St. Christopher.....   | 59    | 34.5  | 20.5                    |
| One adult male from Nevis.....             | 61.5  | 35    | 21                      |
| Six adult males from Barbuda.....          | 58.3  | 33.3  | 22.1                    |
| Four adult males from Antigua.....         | 60.1  | 32.6  | 21                      |
| Four adult males from Guadeloupe.....      | 61.2  | 33.9  | 22.2                    |
| One adult male from Grande Terre.....      | 61    | 33    | 22.5                    |
| Two adult males from Dominica.....         | 59.2  | 34.7  | 21.7                    |
| Seven adult males from Martinique.....     | 60.8  | 34.3  | 21.9                    |
| Two adult males from Santa Lucia.....      | 60.2  | 34    | 23.7                    |
| One adult male from St. Vincent.....       | 63    | 35.5  | 21.5                    |
| Four adult males from Barbados.....        | 62.7  | 34.1  | 21.5                    |
| FEMALES.                                   |       |       |                         |
| Two adult females from Culebra.....        | 58.7  | 32.5  | 23.5                    |
| One adult female from St. Johns.....       | 59.5  | 34    | 26                      |
| One adult female from St. Christopher..... | 58.5  | 32.5  | 24                      |
| Four adult females from Barbuda.....       | 59.4  | 33    | 22.7                    |
| Two adult females from Antigua.....        | 59.2  | 33.7  | 23.7                    |
| One adult female from Guadeloupe.....      | 58.5  | 33.5  | 26                      |
| Three adult females from Dominica.....     | 61    | 34.5  | 23.8                    |
| One adult female from Martinique.....      | 59.5  | 34.5  | 25.5                    |
| One adult female from St. Vincent.....     | 59.5  | 33.5  | 24.1                    |
| Ten adult females from Barbados.....       | 61.3  | 33.9  | 24.4                    |



*Adult female*.—Similar to the adult male, and perhaps not always distinguishable, but usually with the blue jugular area smaller and more greenish blue, and bill longer; length (skins), 110–121 (115); wing, 57.5–62 (59.5); tail, 32–35 (33.5); culmen, 21.5–26.5 (24.1).<sup>a</sup>

*Young*.—Similar to adults, but color of under parts much duller, the chin, throat, and chest wholly dull metallic bronze-green, with underlying portion of feathers grayish dusky.

Lesser Antilles (islands of Barbados, Union, Carriacou, Canouan, Bequia, St. Vincent, Santa Lucia, Martinique, Dominica, Marie Galante, Desirade, Grand Terre, Guadeloupe, Montserrat, Antigua, Barbuda, Nevis, St. Christopher, St. Eustatius, Saba, St. Bartholomew, and Sombbrero), and Virgin group (islands of St. Croix, Anegada, Virgin Gorda, Tórtola, St. Johns, St. Thomas, and Culebra).

[*Trochilus*] *holosericeus* LINNÆUS, Syst. Nat., ed. 10, i, 1758, 120 (based on *Black-bellied Green Humming-bird* Edwards, Gleanings, i, pl. 36, etc.); ed. 12, i, 1766, 191.—Gmelin, Syst. Nat., i, pt. i, 1788, 491.—LATHAM, Index Orn., i, 1790, 305.—TEMMINCK, Cat. Syst., 1807, 81.

*Trochilus holosericeus* AUDEBERT and VIEILLOT, Ois. Dorés, i, 1801, 19, pl. 6 ("Porto Rico").—VIEILLOT, Nouv. Dict. d'Hist. Nat., vii, 1817, 357 ("Mexico;" "Guiana;" "Porto Rico;" "St. Domingo").—LESSON, Hist. Nat. Colibr., 1830–31, 76, pl. 20 (St. Thomas; "Porto Rico;" Martinique); Index Gen. et Synop. Troch., 1832, p. xi.

[*Trochilus*] *holosericeus* VIEILLOT, Tabl. Enc. Méth., ii, 1822, 551.

[*Polytmus*] *holosericeus* GRAY, Gen. Birds, i, Dec., 1848, 108.

[*Polytmus*] *holosericeus* GRAY, Hand-list, i, 1869, 130, no. 1649.

[*Eulampis*] *holosericeus* BONAPARTE, Consp. Av., i, 1850, 72; Rev. et Mag. de Zool., 1854, 250.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 81, part.—MULSANT, Ann. Soc. Linn. Lyon, xxii, 1876, 211, part.—CORY, List Birds West Ind., 1885, 17, part.—SCLATER, Proc. Zool. Soc. Lond., 1889, 395 (Santa Lucia).

*Eulampis holosericeus* GOULD, Mon. Troch., pt. xiv, 1857 (vol. ii, 1861), pl. 83; Introd. Troch., oct. ed., 1861, 68.—CASSIN, Proc. Ac. Nat. Sci. Phila., 1860, 377 (St. Thomas).—SCLATER, Cat. Am. Birds, 1862, 291; Proc. Zool. Soc. Lond., 1871, 272 (Santa Lucia); 1874, 175 (Barbados); 1883, 499 (Anguilla); 1892, 499 (Anguilla).—TAYLOR, Ibis, 1864, 170 (Martinique; Dominica; habits).—MULSANT and VERREAUX, Classif. Troch., 1866, 42; Hist. Nat. Ois.-Mouch., ii, livr. 2, 1875, 134; Suppl., pl. 41.—SEMPER, Proc. Zool. Soc. Lond., 1872, 651 (Santa Lucia; descr. nest).—ELLIOT, Ibis, 1872, 35 (St. Thomas; St. Croix; Martinique; Dominica; Santa Lucia; synonym.; crit.); Classif. and Synop. Troch., 1879, 42 (excl. syn. part).—SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 105 (excl. syn. part).—LAWRENCE, Proc. U. S. Nat. Mus., i, 1878, 60 (Dominica; habits), 192 (St. Vincent), 234 (Antigua); i, 1879, 358 (Martinique), 458 (Guadeloupe), 487, part (Barbuda; Antigua; Guadeloupe; Dominica; Martinique; St. Vincent).—ALLEN, Bull. Nutt. Orn. Club, v, 1880, 167 (Santa Lucia).—LISTER, Ibis, 1880, 42 (St. Vincent).—GRISDALE, Ibis, 1882, 486 (Montserrat; habits).—CORY, Auk, iii, 1886, 351, part; iv, 1887, 96 (Martinique); vii, 1890, 374 (Anegada), 375 (Tortola; Virgin Gorda); viii, 1891, 47 (Antigua; St. Eustatius), 48 (St. Croix; St. Christopher; Guadeloupe); Birds West Ind., 1889, 146, part; Cat. West Ind. Birds, 1892, 13, 106,

<sup>a</sup> Sixteen specimens.

- 155, part; Ibis, 1886, 472 (Barbados), 474 (Marie Galante; Desirade), 475 (Grand Terre).—FEILDEN, Ibis, 1889, 486 (Barbados; habits).—RIDGWAY, Proc. U. S. Nat. Mus., xii, 1890, 130 (Santa Lucia).—VERRILL (G. and A. H.), Trans. Conn. Ac. Arts and Sci., viii, 1892, 331 (Dominica; habits; descr. nest and eggs).—LODGE, Ibis, 1896, 510 (Dominica; habits).—NICOLL, Ibis, 1904, 558 (Barbados; crit.), 562 (Santa Lucia), 570 (Dominica), 573 (St. Christopher; crit.), 574 (St. Croix; St. Thomas).—WELLS, Auk, xix, 1902, 345 (Carriacou; descr. nest).
- E[ulampis] holosericeus* SALVIN, Ibis, 1873, 334 (Barbados).—HARTERT, Novit. Zool., v, 1898, 520 (crit.).
- Eulampis holocericeus* MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., iv, livr. 3, 1878, 200.
- [*Anthracothonax*] *Sericotes holosericeus* REICHENBACH, Aufz. der Colibr., 1854, 11.
- [*Anthracothonax*] *holosericeus* REICHENBACH, Troch. Enum., 1855, 9, pl. 794, fig. 4847.
- Sericotes holosericeus* EUDES-DESLONGCHAMPS, Ann. Mus. Caen, i, 1880, 185.—BOUCARD, Gen. Hum. Birds, 1895, 337 (St. Thomas; Martinique; Dominica; Santa Lucia; St. Croix).—RILEY, Smithsonian. Misc. Coll., xlvii, 1904, 287 (Barbuda; Antigua).—CLARK (A. H.), Proc. Bost. Soc. N. H., xxxii, 1905, 274, part (Barbados; St. Vincent; Bequia; Canouan; Union I.; Carriacou; crit.; descr. nest and eggs).
- [*Sericotes*] *holosericeus* HARTERT, Novit. Zool., v, 1898, 520 (crit.).—SHARPE, Handlist, ii, 1900, 120.
- S[ericotes] holosericeus* HARTERT, Das Tierreich, Troch., 1900, 103.
- L[ampornis] holosericeus* CABANIS and HEINE, Mus. Hein., iii, 1860, 17 ("Porto Rico").
- [*Lampornis*] *holosericeus* GUNDLACH, Journ. für Orn., 1874, 312 (Porto Rico); 1878, 160 (Porto Rico).
- Lampornis holosericeus* GUNDLACH, Anal. Soc. Esp. Hist. Nat.; vii, 1878, 224 (Porto Rico); Journ. für Orn., 1878, 181 (Porto Rico; crit.).
- Trochilus (Lampornis) holosericeus* SUNDEVALL, Öfv. k. Vet.-Ak. Förh., 1869, 600 (Porto Rico).
- Eulampis chlorolæmus* (not of Gould) NEWTON (A. and E.), Ibis, 1859, 138 (St. Croix; habits).—SCLATER, Cat. Am. Birds, 1862, 291, excl. syn. (St. Thomas).—LAWRENCE, Ann. Lyc. N. Y., viii, 1864, 99 (Sombbrero).
- L[ampornis] chlorolaema* CABANIS and HEINE, Mus. Hein., iii, 1860, 17, footnote ("Insel Nevis, St. Croix, St. Thomas, St. Johns, etc.").

### SERICOTES HOLOSERICEUS CHLOROLÆMUS (Gould).

#### DARKER GREEN CARIB.

Similar to *S. l. holosericeus*, but green of throat, etc., much darker (metallic grass green) and blue jugular area larger and more violaceous.

*Adult male*.—Length (skins), 106–112 (109); wing, 59.5–62.5 (61.1); tail, 33.5–35 (34); culmen, 22–22.5 (22.2).<sup>a</sup>

*Adult female*.—Length (skins), 110–128 (117); wing, 62–62.5 (62.2); tail, 34–36 (35.2); culmen, 26.5–27 (26.7).<sup>a</sup>

Islands of Grenada and Tobago.

*Eulampis* ——— Gould nov. sp. BONAPARTE, Consp. Av., i, 1850, 72 (nomen nudum).

[*Eulampis*] *chlorolæmus* (ex Gould, manuscript) BONAPARTE, Rev. et Mag. de Zool., 1854, 250 (nomen nudum!).

<sup>a</sup> Four specimens, from Grenada.

- Eulampis chlorolaemus* GOULD, Mon. Troch., pt. xiv, 1857 (vol. ii, 1861), pl. 84 (locality unknown;<sup>a</sup> coll. J. Gould); Introd. Troch., oct. ed., 1861, 68 ("St. Thomas;" "St. Croix").—BOUCARD, The Hum. Bird, i, 1891, 25 ("Trinidad," i. e., Tobago?; descr.; crit.).
- [*Anthracothorax* γ. *Sericotes*] *chlorolaimus* REICHENBACH, Aufz. der Colibr., 1854, 11 (nomen nudum).
- [*Anthracothorax*] *chlorolaimus* REICHENBACH, Troch. Enum., 1855, 9 (nomen nudum).
- [*Polytmus*] *chlorolaemus* GRAY, Hand-list, i, 1869, 130, no. 1650.
- Sericotes chlorolaemus* BOUCARD, Gen. Hum. Birds, 1895, 337 (Grenada).
- S[ericotes] chlorolaemus* HARTERT, Das Tierreich, Troch., 1900, 103.
- [*Sericotes*] *chlorolaemus* SHARPE, Hand-list, ii, 1900, 120.
- C[?] chlorolaemus* HARTERT, Novit. Zool., v, 1898, 520 (crit.; Grenada).
- Eulampis longirostris* GOULD, Introd. Troch., oct. ed., 1861, 69 (locality unknown; coll. J. Gould).
- [*Polytmus*] *longirostris* GRAY, Hand-list, i, 1869, 130, no. 1651.
- Sericotes longirostris* EUDES-DESLONGCHAMPS, Ann. Mus. Hist. Nat. Caen, i, 1880, 186.
- [*Eulampis*] *longirostris* HARTERT, Novit. Zool., v, 1898, 520 (crit.).
- [*Eulampis*] *holosericeus* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 81, part.
- Eulampis holosericeus* (not *Trochilus holosericeus* LINNÆUS) LAWRENCE, Proc. U. S. Nat. Mus., i, 1879, 272 (Grenada), 487, part (Grenada).—WELLS, Proc. U. S. Nat. Mus., ix, 1887, 619 (Grenada; descr. nest and eggs).—CORY, Cat. West Ind. Birds, 1892, 13, 106, 155, part (Grenada).—Lodge, Ibis, 1896, 519 (Grenada).
- Sericotes holosericeus* CLARK (A. H.), Proc. Bost. Soc. N. H., xxxii, 1905, 274, part (Grenada; crit.).

#### Genus EULAMPIS Boie.

*Eulampis* BOIE, Isis, 1831, 547. (Type, *Trochilus jugularis* LINNÆUS.)

*Culampis* (typographical error?) LESSON, Ind. Gen. Troch., 1832, p. vii.

Rather large Trochilidæ (length about 115–125 mm.); upper parts and under parts of body velvety black, tail-coverts bright metallic bluish green, wings bright metallic bronze-green, and throat and chest soft metallic reddish purple.

Bill longer than head, rather stout, strongly decurved, nearly terete, but decidedly broader than deep basally; culmen rounded but basally contracted into a narrow ridge; terminal portion of maxillary tomium minutely serrate; mandible with a distinct lateral median broad groove or sulcus. Nasal operculum narrow, hidden by dense frontal feathering, the latter extending to or slightly beyond anterior end of nostril, forming a distinct point or antia on each side of mesorhinium. Tarsus stout, densely feathered, except lower and posterior portions; lateral toes equal in length, decidedly shorter than middle toe, the hallux as long as lateral toes or very slightly shorter. Wing more than three times as long as exposed culmen, the outermost primary longest. Tail about half as long as wing, emarginate, the rectrices very broad, with broadly rounded tip, the lateral ones strongly incurved; upper tail-coverts very large and broad.

<sup>a</sup> A specimen said to be from the Island of Nevis is mentioned in the text, but the locality is certainly erroneous.



*Coloration*.—Pileum, back, and under parts of body velvety black; upper tail-coverts bright metallic bluish green; tail dark metallic green or greenish black; wings (including remiges) bright metallic bronze-green; chin, throat, and chest soft reddish purple. Sexes alike.

*Range*.—Lesser Antilles. (Monotypic.)

**EULAMPIS JUGULARIS (Linnæus).**

**PURPLE CARIB.**

*Adults (sexes alike)*.—Upper parts, except wings, upper tail-coverts, and tail, uniform velvety black; upper tail-coverts metallic bluish green or greenish blue; tail greenish black, glossed with metallic bluish green; wings bright metallic green, the wing-coverts and secondaries more yellowish or golden green, the primaries more bluish green, duller (nearly black on the two outermost); malar region, chin, throat, and chest uniform metallic reddish purple (maroon purple to nearly burnt carmine), this color encroaching on sides of neck; under tail-coverts bright metallic bluish green or greenish blue; rest of under parts velvety black; under surface of wings metallic green, brightest on coverts; bill black; iris dark brown; feet dusky.

*Immature*.—Essentially like adults, but reddish purple of throat, etc., narrower, restricted to a broad median stripe, the lateral portions (including malar region) black; black of upper parts glossed, more or less, with bluish green (in younger individuals intermixed, more or less, with brown feathers).

*Adult male*.—Length (skins), 114–136 (124); wing, 67–78.5 (74.3); tail, 35–45 (39.9); culmen, 21–27.5 (22.8).<sup>a</sup>

*Adult female*.—Length (skins), 114–132 (124); wing, 65–78 (71.1); tail, 33.5–42.5 (38); culmen, 19–30 (25.2).<sup>b</sup>

<sup>a</sup> Thirty specimens.

<sup>b</sup> Fifteen specimens.

| Locality.                                  | Wing. | Tail. | Ex-<br>posed<br>culmen. |
|--------------------------------------------|-------|-------|-------------------------|
| MALES.                                     |       |       |                         |
| Two adult males from St. Christopher.....  | 76    | 39    | 24                      |
| One adult male from Nevis.....             | 75    | 41    | 24                      |
| Four adult males from Guadeloupe.....      | 72.6  | 39.5  | 23.3                    |
| Seven adult males from Dominica.....       | 75.6  | 40.7  | 22.5                    |
| Seven adult males from Martinique.....     | 75.6  | 41.6  | 22.3                    |
| Eight adult males from St. Vincent.....    | 72    | 38    | 22.8                    |
| One adult male from Barbados.....          | 78    | 41    | 23                      |
| FEMALES.                                   |       |       |                         |
| One adult female from St. Christopher..... | 70.5  | 36.5  | 30                      |
| Two adult females from Guadeloupe.....     | 69.2  | 35.7  | 25.7                    |
| Seven adult females from Dominica.....     | 73.1  | 39.6  | 24                      |
| Two adult females from St. Vincent.....    | 66.5  | 34.5  | 25                      |
| One adult female from Martinique.....      | 71    | 39    | 27                      |
| Two adult females from Santa Lucia.....    | 70.5  | 38.5  | 26                      |

Lesser Antilles (islands of St. Christopher, Nevis, Barbuda, Montserrat, Guadeloupe, Grand Terre, Dominica, Martinique, Santa Lucia, Bequia, St. Vincent, and Barbados).

[*Trochilus*] *jugularis* LINNÆUS, Syst. Nat., ed. 12, i, 1766, 190 (based on *Red-breasted Humming-bird* Edwards, Gleanings, ii, pl. 266, fig. 2; etc.).—GMELIN, Syst. Nat., i, pt. 1, 1788, 489.—LATHAM, Index Orn., i, 1790, 305.

*Trochilus jugularis* MÜLLER, Syst. Nat. Suppl., 1776, 100 (cites Buff. Pl. Enl. 277, fig. 3).—AUDEBERT and VIEILLLOT, Ois. Dorés, i, 1801, 17, pl. 4; ii, 1802, 126.—TEMMINCK, Cat. Syst., 1807, 79.

*P[olytmus] jugularis* GRAY, Gen. Birds, i, Dec., 1848, 108.

[*Polytmus*] *jugularis* GRAY, Hand-list, i, 1869, 130, no. 1648.

*Eulampis jugularis* REICHENBACH, Aufz. der Colibr., 1854, 11; Troch. Enum., 1855, 9, pl. 796, figs. 4851, 4852.—GOULD, Mon. Troch., pt. xiv, 1857 (vol. ii, 1861), pl. 82; Introd. Troch., oct. ed., 1861, 67.—SCLATER, Cat. Am. Birds, 1862, 291; Proc. Zool. Soc. Lond., 1871, 272 (Santa Lucia); 1889, 326 (Dominica), 395 (Santa Lucia).—TAYLOR, Ibis, 1864, 169 (Martinique; Dominica; habits).—MULSANT and VERREAUX, Classif. Troch., 1866, 45; Hist. Nat. Ois.-Mouch., ii, livr. 2, 1875, 131 (Martinique, etc.; "north Brazil"); iv, livr. 3, 1878, 200.—SEMPER, Proc. Zool. Soc. Lond., 1872, 651 (Santa Lucia).—ELLIOT, Ibis, 1872, 352 (synon.; crit.); Classif. and Synop. Troch., 1879, 43.—LAWRENCE, Proc. U. S. Nat. Mus., i, 1878, 60 (Dominica), 192 (St. Vincent), 240 (Barbuda); i, 1879, 358 (Martinique), 458 (Guadeloupe), 487 (Guadeloupe; Dominica; Martinique; St. Vincent).—ALLEN, Bull. Nutt. Orn. Club, v, 1880, 167 (Santa Lucia).—LISTER, Ibis, 1880, 42 (St. Vincent).—GRISDALE, Ibis, 1882, 489 (Montserrat).—CORY, Auk, iii, 1886, 351, 473 (St. Vincent); iv, 1887, 96 (Martinique); viii, 1891, 48 (St. Christopher; Guadeloupe); Ibis, 1886, 475 (Grand Terre); Birds West Ind., 1889, 145; Cat. West Ind. Birds, 1892, 13, 106, 143.—SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 102.—VERRILL (G. and A. H.), Trans. Conn. Ac. Arts and Sci., viii, 1892, 330, pl. 25, fig. 1 (Dominica; habits; descr. nest).—BOUCARD, Gen. Hum. Birds, 1895, 336).—LODGE, Ibis, 1896, 509 (Dominica; habits).—NICOLL, Ibis, 1904, 562 (Santa Lucia), 570 (Dominica).—CLARK (A. H.), Proc. Bost. Soc. N. H., xxxii, 1905, 273 (St. Vincent; Bequia).

*E[ulampis] jugularis* CABANIS and HEINE, Mus. Hein., iii, 1860, 17 (Martinique).—HARTERT, Das Tierreich, Troch., 1900, 102.

[*Eulampis*] *jugularis* BONAPARTE, Consp. Av., i, 1850, 72 ("St. Thomas;" "Gujana;" "Cayenna"); Rev. et Mag. de Zool., 1854, 250.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 81.—MULSANT, Ann. Soc. Linn. Lyon, xxii, 1876, 210.—SHARPE, Hand-list, ii, 1900, 119.

*Eulampis jugularis* HARTERT, Kat. Vogelsamml. Mus. Senckenb., 1891, 114 (Martinique).

[*Trochilus*] *auratus* GMELIN, Syst. Nat., i, pt. 1, 1788, 487 (based on *Garnet-throated Humming-bird* Latham, Synop., i, pt. 2, 752).

*Trochilus auratus* LESSON, Hist. Nat. Colibr., 1830-31, 46, pl. 10; Index Gen. et Synop. Troch., 1832, p. vii.

*Trochilus (Culampis) auratus* LESSON, Index Gen. et Synop. Troch., 1832, 7.

[*Trochilus*] *auratus*, var.  $\beta$ . GMELIN, Syst. Nat., i, pt. 1, 1788, 487 (based on *Grenat* Buffon, Hist. Nat. Ois., vi, 48).

[*Trochilus*] *violaceus* GMELIN, Syst. Nat., i, pt. 1, 1788, 488 (based on *Colibri violet* Buffon, Hist. Nat. Ois., vi, 57; *Colibri violet de Cayenne* Buffon, Pl. Enl., pl. 600, fig. 2; *Polytmus cayennensis violaceus* Brisson, Orn., iii, 683, pl. 35, fig. 3).—LATHAM, Index Orn., i, 1790, 306.

*Trochilus violaceus* VIEILLLOT, Nouv. Dict. d'Hist. Nat., vii, 1817, 358.

- [Trochilus] violaceus* VIEILLOT, Tabl. Enc. Méth., ii, 1822, 552.  
*T[opaza] violacea* GRAY, Gen. Birds, i, Dec., 1848, 110.  
*Trochilus (Culampis) violaceus* LESSON, Index Gen. et Synop. Troch., 1832, p. vii.  
 (?)*[Trochilus] venustissimus* GMELIN, Syst. Nat., i, 1788, 490 (based on *Polytmus mexicanus cyaneus* BRISS. Av. 3, p. 681, n. 9; *Avicula mexicana cyaneo colore venutissima* SEB. Mus. I, p. 102, t. 65, f. 3; etc.).  
 (?)*[Trochilus] cyanomelas* GMELIN, Syst. Nat., i, 1788, 498 (based on *Black and blue Humming-bird* BANC. Guj. p. 167; Latham, Syn. i, 2, p. 782, n. 50).  
*[Trochilus] granatinus* LATHAM, Index Orn., i, 1790, 305 (based on *Trochilus auratus* Gmelin; *Garnet-throated Humming-bird* Latham, Synop., ii, 752, 9, pl. 34).  
*Trochilus granatinus* VIEILLOT, Nouv. Dict. d'Hist. Nat., vii, 1817, 350 (cites *Trochilus auratus* Gmelin, and Ois. Dorés, "pl. 4, de l'Hist. Colibris d'Audebert").  
 (?)*[Trochilus] cyaneus* LATHAM, Index Orn., i, 1790, 309 (based on *Trochilus venustissimus* Gmelin; *Polytmus mexicanus cyaneus* BRISSON, Orn., iii, 681, 3; *Le Colibri bleu* BUFFON, Ois., vi, 61; etc.).  
 (?)*[Trochilus] bancrofti* LATHAM, Index Orn., i, 1790, 317 (based on *Trochilus cyanomelas* Gmelin; *Black and blue Humming-bird* BANCROFT, Guiana, p. 167; Latham, Synop., ii, 782).  
*Trochilus bancrofti* VIEILLOT, Nouv. Dict. d'Hist. Nat., vii, 1817, 359.  
*Certhia prasinoptera* SPARRMAN, Mus. Carls., fasc. 4, no. lxxxi, 1789, pl. 81 (based on *Souimanga prasinoptère* Vieillot, Ois. Dor., ii, 1802, 65).  
*Eulampis jugularis eximius* BERLEPSCH, Ibis, July, 1887, 294 (Nevis, Lesser Antilles; coll. Count von Berlepsch).  
*[Eulampis jugularis] eximius* HARTERT, Novit. Zool., v, 1898, 520 (crit.).

#### Genus COLIBRI Spix.

- Colibri* SPIX, Av. Bras., i, 1824, 80. (Type, *C. crispus* Spix = *Trochilus serrirostris* Vieillot.)  
*Petasophora* GRAY, List Gen. Birds, 1840, 13. (Type, *Trochilus serrirostris* Vieillot.)  
*Petasophorus* (emendation) MULSANT and VERREAUX, Classif. Troch., 1866.  
*[Petasophora] β. Telesiella* REICHENBACH, Aufz. der Colib., 1854, 13. (Type, *Ornismya delphinæ* Lesson.)  
*[Petasophora] γ. Praxilla* REICHENBACH, Aufz. der Colib., 1854, 13. (Type, *Ornismya anais* Lesson, i. e., *Petasophora iolota* Gould.)  
*Telesiella* (emendation) CABANIS and HEINE, Mus. Hein., iii, 1860, 27.  
*Delphinella* "Reich[enbach]" BONAPARTE, Ann. Sci. Nat. (Zool.), sér. 4, i, 1854, 137 (new name for *Telesiella* Reichenbach).

Medium-sized to large Trochilidæ (length about 100–125 mm.) with a post-auricular tuft of violet, violet-blue, or violet-red broad and rounded, imbricated feathers, and the broad, rather long, tail metallic blue, green, or olive crossed by a subterminal band of dark metallic blue, green, black, or bronze-dusky.

Bill shorter than head to decidedly longer, straight or slightly decurved, nearly terete but slightly depressed basally; culmen rounded, but contracted at base into a narrow ridge; tomia sometimes smooth, sometimes with minute serrations near tip of maxillary tomium; mandible with a distinct longitudinal median groove



or sulcus. Nasal operculum moderately broad and convex, unfeathered, but mostly concealed by overhanging frontal feathers, which extend anteriorly beyond anterior end of nostrils, forming a more or less prominent point or antia on each side of the mesorhinium. Tarsus clothed with short feathers; middle and inner toes about equal in length, the outer slightly shorter, the hallux shorter than outer toe; feet relatively very small. Wing more than three times (sometimes four times) as long as exposed culmen, the outermost primary longest. Tail nearly to quite two-thirds as long as wing, emarginate, the rectrices broad, with broadly rounded tip.

*Coloration*.—Above metallic green or (in one species only) grayish brown or olive, the tail metallic green or blue, or (in *C. delphinæ*) olive, crossed by a subterminal band of darker green, blue, blackish, or bronze-dusky; a conspicuous post-auricular tuft of violet, violet-blue, or (in *C. serrirostris*) violet-red broad, rounded and imbricated feathers; under parts mostly metallic green, this broken by darker centers to the strongly individualized feathers (producing an effect quite peculiar to the genus), sometimes relieved by a violet or violet-blue pectoral or jugular area, the chin and suborbital region also sometimes violet or violet-blue; in *C. delphinæ* the under parts brownish (more or less spotted or mottled), the throat with metallic green, bluish, or bronzy feathers, the tail-coverts broadly margined with light cinnamon. Sexes alike in coloration, but females usually decidedly smaller than males.

*Range*.—Southern Mexico to Guiana, southern Brazil, Bolivia, and Peru. (Nine species.)

## KEY TO THE SPECIES OF COLIBRI.

a. General color metallic green.

b. A patch of violet-blue on center of chest or breast.

c. Larger (wing 70–84.5, tail 45–55, culmen 23–28.5); whole chin blue. (Colombia to Venezuela, Bolivia, and Peru.).....*Colibri iolotus* (extralimital).<sup>a</sup>

cc. Smaller (wing 60–70, tail 35.5–45, culmen 18–22); chin wholly green or with only extreme upper margin blue. (Guatemala and southern Mexico.)

*Colibri thalassinus* (p. 482).

bb. No blue on under parts. (Costa Rica to Venezuela, Bolivia, and Ecuador.)

*Colibri cyanotus* (p. 484).

aa. General color grayish brown or olive, the upper tail-coverts (in young other upper parts) margined terminally with cinnamon, rusty, or buffy. (Guatemala to Peru, Trinidad and Guiana.).....*Colibri delphinæ* (p. 486).

<sup>a</sup> *Rhamphodon anais* (not *Ornismya anais* Lesson, 1830) Lesson, Hist. Nat. Troch., 1832, 146, pl. 55.—*Petasophora anais* Gould, Proc. Zool. Soc. Lond., 1847, 8; Mon. Troch., pt. iv, 1853, pl. 224; Introd. Troch., oct. ed., 1861, 124; Elliot, Classif. and Synop. Troch., 1879, 50.—*Petasophora iolata* Gould, Proc. Zool. Soc. Lond., 1847, 9 (Bolivia).—*Petasophora iolata* Gould, Mon. Troch., pt. iv, 1853, pl. 225; Introd. Troch., oct. ed., 1861, 124; Salvin, Cat. Birds Brit. Mus., xvi, 1892, 107.—*C[olibri] iolotus* Hartert, Das Tierreich, Troch., 1900, 94 (monogr.).

This species undoubtedly requires subdivision into two or more subspecies.

## COLIBRI THALASSINUS (Swainson).

## MEXICAN VIOLET-EAR.

*Adult male*.—Above metallic green or bronze-green, darker or duller on pileum; tail metallic bluish green or greenish blue (middle rectrices sometimes green or even bronze-green) crossed by a broad subterminal band of blue-black; remiges dark brownish slate or dusky, very faintly glossed with bronzy purplish or violet, the secondaries more or less glossed at tip and on edges with metallic green or bronze-green; loreal, suborbital, and auricular regions rich metallic dark violet-blue, this sometimes invading, somewhat, sides of neck; malar region, chin, and throat bright metallic green (varying from slightly bluish to yellowish emerald green), each feather with a darker mesial streak or spot; center of chest dark metallic blue or violet-blue, this passing into metallic-green laterally; breast, sides, flanks, and abdomen metallic green or bronze-green, duller posteriorly, where sometimes slightly broken by faint pale grayish brown or pale grayish buff tips or margins to the feathers; under tail-coverts metallic green or bronze-green, margined or edged with pale buffy brownish or grayish buffy; bill dull black; iris dark brown; feet dusky grayish brown; length (skins), 103–122 (114); wing, 63–70 (66.9); tail, 39–45 (42.3); culmen, 18–22 (20.2).<sup>a</sup>

*Adult female*.—Similar to the adult male, but smaller and slightly duller in coloration; length (skins), 103–112 (107); wing, 60–63 (61); tail, 35.5–40 (37.5); culmen, 19–22 (20.3).<sup>b</sup>

*Young*.—Similar to adult female, but much duller in coloration, the upper tail-coverts and feathers of rump (sometimes pileum also) narrowly and indistinctly margined with pale grayish buffy; green of under parts much duller and suffused with grayish, the feathers indistinctly margined terminally with pale grayish, and blue of chest absent or slightly indicated.

Southern Mexico, in States of Guanajuato, Mexico (Temascaltepec; Ajusco; Tetelco; Chimalapa; Valley of Mexico; Hacienda Eslava), Hidalgo (Reál del Monte), Puebla, Vera Cruz (Jalapa; Córdoba;

<sup>a</sup> Six specimens.

<sup>b</sup> Sixteen specimens.

| Locality.                                                                     | Wing. | Tail. | Ex-<br>posed<br>culmen. |
|-------------------------------------------------------------------------------|-------|-------|-------------------------|
| MALES.                                                                        |       |       |                         |
| Nine adult males from southern Mexico.....                                    | 67.3  | 42.9  | 20.8                    |
| Seven adult males from Guatemala.....                                         | 66.3  | 41.6  | 19.3                    |
| FEMALES.                                                                      |       |       |                         |
| Five adult females from southern Mexico (Vera Cruz, Michoacán, and Oaxaca)... | 60.6  | 37.4  | 20.6                    |
| One adult female (?) from Chiapas.....                                        | 63    | 38    | 19                      |

Coátepec; Mount Orizaba), Oaxaca (Totóntepec; Oaxaca City), Guerrero (Chilpancingo, 6,000–8,000 feet), Michoacán (Patzcuaro; Mount Tancítaro), Jalisco (Bolaños) and Chiapas (San Cristóbal) and Territory of Tepic (San Blas) and highlands of Guatemala (San Martín, Santa María, Quipaché, etc., Quezaltenango; Montañas de Chilasco; Dueñas; Cobán; Tolimán; Guatemala City; Hacienda Chancól; Volcán de Fuego).

*Trochilus thalassinus* SWAINSON, Philos. Mag., n. s., i, 1827, 441 (Temascáltepec, Mexico; Bullock coll.).

*P[olytmus] thalassinus* GRAY, Gen. Birds, i, Dec., 1848, 108.

*[Polytmus] thalassinus* GRAY, Hand-list, i, 1869, 127, no. 1606.

*Petasophora thalassina* GOULD, Proc. Zool. Soc. Lond., 1847, 8 (Mexico; crit.); Mon. Troch., iv, 1853, pl. 227; Introd. Troch., oct. ed., 1861, 125.—SCLATER, Proc. Zool. Soc. Lond., 1858, 297 (Oaxaca); 1859, 367 (Jalapa), 368 (Totóntepec, Oaxaca); 1864, 177 (near City of Mexico); Cat. Am. Birds, 1862, 306.—SCLATER and SALVIN, Ibis, 1859, 127 (Guatemala).—SALVIN, Ibis, 1859, 468 (above the plains of Dueñas, Guatemala); 1860, 195, 260 (Dueñas and Volcán de Fuego, Guatemala), 263 (Volcán de Fuego, Guatemala); Cat. Birds Brit. Mus., xvi, 1892, 109.—MULSANT and VERREAUX, Classif. Troch., 1866, 48; Hist. Nat. Ois.-Mouch., ii, livr. 2, 1875, 148 (Mexico; Guatemala); iv, livr. 3, 1878, 202.—LAWRENCE, Proc. Bost. Soc. N. H., xiv, 1871, 284 ("Tres Marias"; error); Mem. Bost. Soc. N. H., ii, 1874, 292 ("Tres Marias").—BOUCARD, Notes Troch. du Mex., 1875, 11 (Mexico; Puebla; Oaxaca; Guatemala); Liste Ois. récol. Guat., 1878, 45; Gen. Hum. Birds, 1895, 318.—DE OCA, La Naturaleza, iii, 1875, 64 (Hacienda Eslava, Chimalapa, and Tetelco, Valley of Mexico; Montañas del Orizaba and Coátepec, Vera Cruz); Troq. de Mex., 1875, 27, pl. (5), fig. 17.—ELLIOT, Ibis, 1876, 404 (synon.; crit.); Classif. and Synop. Troch., 1879, 51.—SUMICHRAST, La Naturaleza, v, 1881, 250 (Orizaba).—FERRARI-PEREZ, Proc. U. S. Nat. Mus., ix, 1886, 157 (Puebla).—HERRERA, La Naturaleza, (2), i, 1891, 322 (Valley of Mexico).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 281.—HARTERT (E. and C.), Novit. Zool., i, 1894, 20 (Chilpancingo, Guerrero, 6,000–8,000 ft.; descr. nest and eggs).—COX, Auk, xii, 1895, 357 (Mt. Orizaba, 11,000 ft.).—DEARBORN, Pub. 125, Field Mus. N. H., 1907, 99 (near Tecpám, Guatemala, 9,500 ft.).

*[Petasophora] thalassina* BONAPARTE, Rev. et Mag. Zool., 1854, 250.—REICHENBACH, Troch. Enum., 1855, 11.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 89.—MULSANT, Ann. Soc. Linn. Lyon, xxii, 1876, 211.—SHARPE, Hand-list, iii, 1900, 117.

*C[ynanthus] thalassinus* JARDINE, Nat. Libr., Humming Birds, ii, 1833, 174.

*[Colibri] thalassinus* BONAPARTE, Consp. Av., i, 1850, 69.

*Colibri thalassinus* OBERHOLSER, Proc. U. S. Nat. Mus., xxiv, 1902, 319, in text.

*C[olibri] thalassinus* HARTERT, Das Tierreich, Troch., 1900, 94 (monogr.).

*Colibris thalassina* SCLATER, Proc. Zool. Soc. Lond., 1856, 287 (Mexico).

*[Petasophora. ? Praxilla] thalassina* REICHENBACH, Aufz. der Colibr., 1854, 13.

*Ornismya anais* LESSON, Hist. Nat. Colibr., Suppl. Ois.-Mouch., 1831, 104, pl. 3 ("Chile"); Index Gen. et Synop. Troch., 1832, p. ix, part (Temascáltepec, Mexico).

*Rhamphodon anais* LESSON, Les Trochilidéés, 1831, 146, 148, pls. 55, 56 (Mexico).

*Trochilus anais* SWAINSON, Birds Brazil and Mex., 1841?, pl. 75.



## COLIBRI CYANOTUS (Bourcier and Mulsant).

## LESSER VIOLET-EAR.

Similar to *C. thalassinus*, but without blue on chest or lores.

*Adult male*.—Above metallic green or bronze-green; tail more bluish green (the middle rectrices usually more bronzy), crossed by a broad subterminal band of blue-black; remiges dark brownish slate or dusky, very faintly glossed with purplish; suborbital and auricular (but not loreal) region rich dark metallic violet-blue; chin and throat bright metallic green (varying from slightly bluish to yellowish emerald green) each feather with a darker median streak or spot; rest of under parts duller metallic green, the center of chest sometimes slightly tinged with bluish green; under tail-coverts metallic green or bronze-green, margined (broadly toward base) with pale brownish or grayish buffy; femoral tufts brownish white; bill dull black; iris dark brown; feet grayish brown or dusky; length (skins), 98–118 (109); wing, 59.5–68.5 (65.2); tail, 35–45.5 (40.4); culmen, 19.5–23.5 (21.2).<sup>a</sup>

*Adult female*.—Similar to the adult male, but smaller and slightly duller in color; length (skins), 96–113 (103); wing, 58–68 (62.3); tail, 34–43 (38.3); culmen, 16–23 (20.5).<sup>b</sup>

*Young*.—Essentially like adults, but feathers of upper parts conspicuously tipped or margined with rusty brown or cinnamon, those of under parts similarly but less distinctly margined, the chin and throat dull metallic green (the brilliant feathers of the adult plumage first appearing on center of throat).

| <i>a</i> Thirty specimens.                                       | <i>b</i> Twelve specimens. |       |                         |
|------------------------------------------------------------------|----------------------------|-------|-------------------------|
| Locality.                                                        | Wing.                      | Tail. | Ex-<br>posed<br>culmen. |
| MALES.                                                           |                            |       |                         |
| Ten adult males from Costa Rica.....                             | 65.3                       | 40.6  | 21.3                    |
| Six adult males from Panamá.....                                 | 64.9                       | 40    | 21.8                    |
| Five adult males from Colombia.....                              | 63.4                       | 39.4  | 20.6                    |
| One adult male ( <i>C. c.</i> ———?) from eastern Ecuador.....    | 68.5                       | 40.5  | 19                      |
| Nine adult males from Venezuela.....                             | 66.2                       | 40.9  | 20.9                    |
| FEMALES.                                                         |                            |       |                         |
| Seven adult females from Costa Rica.....                         | 60.5                       | 37.7  | 20.3                    |
| Two adult females ( <i>C. c.</i> ———?) from eastern Ecuador..... | 61.2                       | 36.7  | 20.7                    |
| Five adult females from Venezuela.....                           | 64.9                       | 39.2  | 20.8                    |

I feel quite sure that several of the alleged females from Venezuela are in reality males with the sex wrongly determined. If these were eliminated the average dimensions of the female would be considerably reduced.

Specimens from Costa Rica, Panamá, Colombia, and Venezuela seem to be quite alike; but those from eastern Ecuador (Baeza) are easily distinguished by their conspicuously buffy under tail-coverts and (at least in males) larger size.

Costa Rica (Grécia; Las Cruces de Candelária; Escazú; San José; Volcán de Irazú; Volcán de Turrialba; La Estrella de Cartago; Cartago; Orosí; Barranca; San Pedro; Dota; Copéy, Santa Maria de Dota) and southward through Panamá (Boquete; Volcán de Chiriquí; Chitra; Calovévora) to Colombia (Bogotá; Valparaiso, El Libano, Minca, San Sebastián, and El Mamón, Santa Marta; Alto; Canuto; Santa Elena) and Venezuela (Caracas; Conejos Escorial and Culata, near Mérida; Mérida; Aragua Valley; Andes de Cumaná); Ecuador (Baeza; Pallatanga; Cayandeled; Cechce; Pogio; Ibarra; La Concepción; Baños)<sup>a</sup>? Peru (Idma; Tambillo; Huasampilla; Maraynioc; Culinachay)?; Bolivia (Yungas; Tilotilo)?

(?) *Ornismya anais* LESSON, Hist. Nat. Troch., 1830-31, 151, pl. 57.

*T[rochilus] cyanotus* BOURCIER and Mulsant, Ann. Sci. Phys. et Nat. Lyon, vi, 1843, 41 (Caracas, Venezuela); Rev. Zool., vi, April, 1843, 101 (Caracas).

*Petasophora cyanotus* GOULD, Proc. Zool. Soc. Lond., 1847, 8 (Bogotá, Colombia; crit.); Mon. Troch., pt. v, May, 1853 (vol. iv), pl. 228.—(?) WHITELY, Proc. Zool. Soc. Lond., 1873, 784 (Peru).

(?) *Colibris cyanotus* BERLEPSCH and STOLZMANN, Proc. Zool. Soc. Lond., 1902, 21 (Maraynioc, Culinachay, centr. Peru).

*C[olibri] cyanotus* HARTERT, Das Tierreich, Troch., 1900, 94.

(?) *Colibri cyanotus* OBERHOLSER, Proc. U. S. Nat. Mus., xxiv, 1902, 319 (Baeza, e. Ecuador; crit.).—BERLEPSCH and STOLZMANN, Ornith., 1906, 95 (Idma, Peru).

*[Colibri] cyanotis* BONAPARTE, Consp. Av., i, 1850, 69.

*[Petasophora. γ. Praxilla] cyanotis* REICHENBACH, Aufz. der Colibr., 1854, 13.

*[Petasophora] cyanotis* BONAPARTE, Rev. et Mag. de Zool., 1854, 251.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 89.

(?) *Petasophora cyanotis* SCLATER, Proc. Zool. Soc. Lond., 1859, 145 (Pallatanga, Ecuador).—WHITELY, Proc. Zool. Soc. Lond., 1873, 784 (Peru).—TACZANOWSKI, Proc. Zool. Soc. Lond., 1879, 237 (Tambillo, Peru); Orn. du Pérou, i, 1884, 369.—BERLEPSCH and TACZANOWSKI, Proc. Zool. Soc. Lond., 1884, 303 (Cayandeled and Cechce, w. Ecuador).—HARTERT (E. and C.), Novit. Zool., i, 1894, 4 (Pogio, Ecuador).—HARTERT (E.), Novit. Zool., v, 1898, 495 (Ibarra, n. w. Ecuador).—SALVADORI and FESTA, Boll. Mus. Zool., etc., Torino, xv, 1900, 9 (La Concepción, centr. Ecuador).

(?) *P[etasophora] cyanotis* CABANIS and HEINE, Mus. Hein., iii, 1860, 26, part (Peru).

(?) *[Petasophora] cyanotis* GOULD, Proc. Zool. Soc. Lond., 1870, 803 (Baños, Ecuador).

*P[etasophora] cyanotis* CABANIS and HEINE, Mus. Hein., iii, 1860, 26, part (Veragua, Panamá).

*Petasophora cyanotis* GOULD, Introd. Troch., oct. ed., 1861, 125.—CABANIS, Journ. für Orn., 1862, 162 (Costa Rica; crit.).—LAWRENCE, Ann. Lyc. N. Y., ix, 1868, 125 (Barranca, Dota, and Cartago, Costa Rica).—FRANTZIUS, Journ. für Orn., 1869, 316 (Costa Rica).—SALVIN, Proc. Zool. Soc. Lond., 1870, 210 (Volcán de Chiriquí, Chitra, and Calovévora, Panamá); Cat. Birds Brit. Mus., xvi, 1892, 110 (Orosí and Volcán de Irazú, Costa Rica; localities in

<sup>a</sup> As stated in footnote on p. 484 the birds from eastern Ecuador (I have not seen any from central or western Ecuador) are probably subspecifically distinct. In this case it is hardly possible that those from Peru and Bolivia should represent true *C. cyanotus*, but I have seen none from either of those countries.

- Panamá; Minca and San Sebastián in Santa Marta, and Bogotá, Colombia; Mérida and Aragua Valley, Venezuela; Baños, Ecuador?; Huasampilla, Peru?; Yungas and Tilotilo, Bolivia?).—WYATT, Ibis, 1871, 377 (Alto and Canuto, Colombia, 5,000–6,000 ft.).—MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., ii, livr. 2, 1875, 151 (Costa Rica; Colombia; Venezuela; Ecuador?; Peru?); iv, livr. 3, 1878, 202 (synonymy); Suppl. pl. 40.—ELLIOT, Ibis, 1876, 404 (Costa Rica; Panamá; Colombia; Venezuela); Classif. and Synop. Troch., 1879, 51.—BOUCARD, Proc. Zool. Soc. Lond., 1878, 69 (Volcán de Irazú, 8,000 ft.; habits); The Hum. Bird, ii, 1892, 85 (Bogotá).—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1879, 530 (Santa Elena, Colombia).—SALVIN and GODMAN, Ibis, 1880, 173 (Minca, Santa Marta, Colombia, 2,000 ft.); Biol. Centr.-Am., Aves, ii, 1892, 282 (Las Cruces de Candelária, etc., Costa Rica; localities in Panamá; Colombia, etc.).—NUTTING, Proc. U. S. Nat. Mus., v, 1882, 500 (San José, Costa Rica).—ZELEDÓN, Cat. Aves de Costa Rica, 1882, 20; Anal. Mus. Nac. Costa Rica, i, 1887, 121 (Faldas de Irazú).—RIDGWAY, Proc. U. S. Nat. Mus., v, 1883, 500 (Volcán de Irazú).—BERLEPSCH, Journ. für Orn., 1884, 319 (Alto and Canuto, Colombia); 1887, 318 (Bogotá; synonymy).—BANGS, Proc. New Engl. Zool. Club, i, 1899, 76 (San Sebastián and El Mamón, Santa Marta, Colombia).—ALLEN, Bull. Am. Mus. N. H., xiii, 1900, 140 (Valparaiso and El Libano, Santa Marta).—SIMON and DALMAS, Ornith., xi, 1901, 214 (Andes de Cumaná, Venezuela).
- [*Petasophora*] *cyanota* SHARPE, Hand-list, ii, 1900, 117.
- P[etasophora] thalassina* (not *Trochilus thalassinus* Swainson) CABANIS and HEINE, Mus. Hein., iii, 1860, 27 (Veragua, Panamá).
- (?) *Petasophora cabanidis*<sup>a</sup> HEINE, Journ. für Orn., 1863, 182 (Costa Rica).
- (?) [*Polytmus*] *cabanidis* GRAY, Hand-list, i, 1869, 127, no. 1608.
- (?) [*Petasophora*] *cabanidis* HEINE and REICHENOW, Nom. Mus. Hein. Orn., 1890, 177.
- Petasophora cyanotis cabanidis* (not *Petasophora cabanidis* Heine?) BANGS, Proc. New Engl. Zool. Club, iii, Jan. 30, 1902, 30 (Boquete, Panamá, 4,000–5,800 ft.; crit.).
- Petasophora cyanotus cabanidis* OBERHOLSER, Proc. U. S. Nat. Mus., xxiv, no. 1258, Jan., 1902, 319, in text.
- Colibri cyanotus cabanidis* CARRIKER, Ann. Carnegie Mus., vi, 1910, 538 (mts. of Costa Rica; crit.).
- Petasophora cabanisii* LAWRENCE, Ann. Lyc. N. Y., ix, 1868, 126 (Costa Rica; coll. G. N. Lawrence).—BOUCARD, The Hum. Bird, ii, 1892, 85 (Veragua); Gen. Hum. Bird, 1895, 318 (Irazú, Costa Rica; Veragua).
- [*Petasophora*] *cyan[otis] cabanisi* SIMON, Cat. Troch., 1897, 22.

### COLIBRI DELPHINÆ (Lesson).

#### BROWN VIOLET-EAR.

*Adults (sexes alike).*—Above dull grayish brown or olive, very faintly glossed (in certain lights) with greenish bronze, bronze, or purplish bronze, the feathers of rump and upper tail-coverts margined terminally with cinnamon or cinnamon-buffy; tail greenish olive, faintly but distinctly glossed with bronze, crossed by a broad sub-terminal band of blackish or dusky, glossed with purplish bronze; remiges dark brownish slate or dusky, faintly glossed with purplish;

<sup>a</sup> According to Hartert (Novit. Zool., iv, 148), *C. cabanidis* Heine is *C. delphinæ* (Lesson).



lores pale cinnamon or dull whitish; malar region dull white to pale brownish gray or pale brown, forming a more or less conspicuous stripe; suborbital and auricular regions and patch on upper portion of side of neck rich dark metallic violet-blue or bluish violet; general color of under parts dull grayish brown, the feathers usually more or less distinctly edged or margined with paler (forming a somewhat streaked appearance), the throat mostly (sometimes wholly) covered by a patch of metallic green, this often passing at lower extremity into blue or violet-blue; under tail-coverts cinnamon or cinnamon-buff, with a subbasal or central spot of light grayish brown or olive; femoral tufts (inconspicuous) dull white, tinged with cinnamon; bill dull black, the mandible somewhat more brownish, at least basally; iris dark brown; feet dusky grayish brown.

*Young*.—Similar to adults, but feathers of back, scapulars, hind-neck and pileum broadly tipped or terminally margined with rusty brown or dull cinnamon, wing-coverts narrowly tipped with the same, and (in earlier stage) without any blue on side of head or neck.<sup>a</sup>

*Adult male*.—Length (skins), 99–114 (106); wing, 67.5–76.5 (71.9); tail, 36.5–47 (41.6); culmen, 16–20 (17.5).<sup>b</sup>

*Adult female*.—Length (skins), 93–116 (105); wing, 66–76 (69.3); tail, 37–45 (40); culmen, 16–18 (16.9).<sup>c</sup>

Guatemala (Cobán, Vera Paz), British Honduras (forest near Manatee Lagoon) and southward through Honduras (San Pedro), Nicaragua (Chontales), Costa Rica (Escazú; San Pedro de Moján; Bonilla; Miravalles; Boruca), Panamá (Calovévera, Verágua), Colombia (Bogotá; Bonda and Minca, Santa Marta; Rio Dagua; Bucara-

<sup>a</sup> In what are apparently younger birds there is no metallic blue whatever on sides of neck, the auricular region being dusky (nonmetallic); in apparently older individuals there is a patch of metallic violet-blue on upper side of neck, immediately behind the auricular region.

<sup>b</sup> Twenty-three specimens.

<sup>c</sup> Eleven specimens.

| Locality.                                     | Wing. | Tail. | Ex-<br>posed<br>culmen. |
|-----------------------------------------------|-------|-------|-------------------------|
| MALES.                                        |       |       |                         |
| One adult male from Guatemala.....            | 74.5  | 43    | 20                      |
| One adult male from British Honduras.....     | 71    | 39.5  | 17.5                    |
| Ten adult males from Costa Rica.....          | 70.6  | 40.5  | 16.7                    |
| Six adult males from Colombia.....            | 71.8  | 42.2  | 17.3                    |
| Five adult males from western Ecuador.....    | 74.3  | 43.2  | 18.7                    |
| FEMALES.                                      |       |       |                         |
| Four adult females from Costa Rica.....       | 66.5  | 39.5  | 16.6                    |
| Two adult females from Colombia.....          | 66    | 38    | 16.5                    |
| Three adult females from western Ecuador..... | 72.3  | 40.2  | 17.3                    |
| Two adult females from British Guiana.....    | 72.5  | 43.2  | 18                      |

manga), Ecuador (Quito; Mindo; Guala; Citado; Zamora; Poggio; Sarayacu; Paramba; Ibarra), Trinidad (Aripo), and Venezuela (Caracas; Parima Mountains) to British Guiana (Roraima; Merumé Mountains) and Peru (Cosnipata; Huambo).

*Ornismya delphinæ* LESSON, Rev. Zool., ii, Feb., 1839, 44 (unknown; coll. Longue-mare).

*P[olytmus] delphinæ* GRAY, Gen. Birds, i, Dec., 1848, 108.

*[Polytmus] delphinæ* GRAY, Hand-list, i, 1869, 127, no. 1610.

*Polytmus delphinæ* LÉOTAUD, Ois. Trinidad, 1866, 134.

*Petasophora delphinæ* GOULD, Proc. Zool. Soc. Lond., 1847, 9; Mon. Troch., iv, pt. v, 1853, pl. 229; Introd. Troch., oct. ed., 1861, 125.—SALVIN, Ibis, 1860, 194, 195, 261 (Cobán, Guatemala; habits); 1872, 320 (Chontales, Nicaragua); 1885, 434 (Merumé Mts. and Roraima, Brit. Guiana, 3,000–5,500 ft.); Proc. Zool. Soc. Lond., 1870, 210 (Calovévora, Panama); Cat. Birds Brit. Mus., xvi, 1892, 111, 657 (Cobán, Guatemala; Chontales, Nicaragua; Calovévora, Panamá; Minca in Santa Marta, Fusagasugá, Bogotá, and Llanos del Rio Mata, Colombia; Quito and Sarayacu, Ecuador; Peru; Caracas, Venezuela; Trinidad?; Merumé Mts. and Roraima, Brit. Guiana).—SALVIN and SCLATER, Ibis, 1860, 276 (Cobán).—MULSANT and VERREAUX, Classif. Troch., 1866, 49; Hist. Nat. Ois.-Mouch., ii, livr. 2, 1875, 157; iv, livr. 3, 1878, 202.—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1870, 837 (Guatemala; San Pedro, Honduras; Costa Rica; Guiana).—WHITELY, Proc. Zool. Soc. Lond., 1873, 784 (Cosnipata, Peru).—ELLIOT, Ibis, 1876, 406 (synon.; crit.); Classif. and Synop. Troch., 1879, 52.—SALVIN and GODMAN, Ibis, 1880, 173 (Minca, Santa Marta, Colombia, 2,000 ft.); Biol. Centr.-Am., Aves, ii, 1892, 282.—ZELEDÓN, Cat. Aves de Costa Rica, 1882, 20; Anal. Mus. Nac. Costa Rica, i, 1887, 121 (Bogotá).—TACZANOWSKI, Proc. Zool. Soc. Lond., 1882, 37 (Huambo, Peru); Orn. du Pérou, i, 1884, 371.—BERLEPSCH, Journ. für Orn., 1884, 309 (Bucaramanga, Colombia; crit.); 1887, 318 (Bogotá; synonymy); Proc. Zool. Soc. Lond., 1885, 118 (Citado, Ecuador).—BOUCARD, The Hum. Bird, ii, 1892, 85 (Veragua; Bogotá); v, 1895, 7 (Rio Dagua, n. w. Colombia); Gen. Hum. Birds, 1895, 321.—HARTERT (E. and C.), Novit. Zool., i, 1894, 4 (Zamora and Poggio, Ecuador).—CHAPMAN, Bull. Am. Mus. N. H., vi, 1894, 57 (Trinidad).—CHERRIE, Bull. Brooklyn Inst. Arts and Sci., 1906, 6 (Aripo, Trinidad).—HARTERT, Novit. Zool., iv, 1897, 148 (crit.); v, 1898, 496 (Paramba and Ibarra, n. w. Ecuador).—BANGS, Proc. Biol. Soc. Wash., xii, 1898, 135 (Santa Marta).—ALLEN, Bull. Am. Mus. N. H., xiii, 1900, 140 (Bonda, Santa Marta).

*[Petasophora] delphinæ* BONAPARTE, Rev. et Mag. de Zool., 1854, 251.—REICHENBACH, Troch. Enum., 1855, 11.—GOULD, Proc. Zool. Soc. Lond., 1870, 803 (Citado, Ecuador).—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 89.—SHARPE, Hand-list, ii, 1900, 117.

*[Petasophora] delphinae* MULSANT, Ann. Soc. Linn. Lyon, xxii, 1876, 211.

*[Colibri] delphinae* BONAPARTE, Consp. Av., i, 1850, 69.

*[Colibri] delphinae* HARTERT, Das Tierreich, Troch., 1900, 93 (monogr.).

*Colibri delphinae* BERLEPSCH and HARTERT, Novit. Zool., ix, 1902, 87 (Parima Mts., Venezuela).—OBERHOLSER, Proc. U. S. Nat. Mus., xxiv, 1902, 319 (Mindo and Guala, w. Ecuador).—BANGS, Auk, xxiv, 1907, 296 (Boruca, Costa Rica).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 537 (Costa Rica).

*[Petasophora. β. Telesiella] delphinae* REICHENBACH, Aufz. der Colib., 1854, 13.

*[Telesiella] delphinae* CABANIS and HEINE, Mus. Hein., iii, 1860, 27 (Colombia).

*[Telesiella] delphinae* HEINE and REICHENOW, Nom. Mus. Hein. Orn., 1890, 177 (Colombia).

## Genus LAMPROLAIMA Reichenbach.

[*Heliodora*] *δ. Lamprolaima* REICHENBACH, Aufz. der Colib., 1854, 9. (Type, *Ornismya rhami* Lesson.)

*Lamprolama* (emendation) GOULD, Mon. Troch., pt. xi, May, 1856, text to pl. 61 (vol. ii, 1861, text to pl. 61).

*Lamprolaima* CABANIS and HEINE, Mus. Heine, iii, March, 1860, 30.

Large Trochilidae (length about 110–120 mm.) with straight bill about as long as head; wing four times as long as exposed culmen; tail nearly two-thirds as long as wing, emarginate; remiges extensively deep cinnamon-rufous or chestnut, the adult male with chin and throat rosy purple between lateral areas of velvety black, chest metallic violet-blue, and tail violet-black, the female with under parts deep brownish gray, glossed with green laterally.

Bill about as long as head, straight, slender, terete; culmen rounded terminally, narrowly ridged basally; tomia smooth; mandible with the usual longitudinal groove, but this narrow and rather indistinct. Nasal operculum rather narrow, convex and tumid posteriorly, mostly concealed by frontal feathering, which extends to or a little beyond anterior end of nostrils, forming a very short point or antia on each side of culmen. Tarsus rather stout, densely feathered except along posterior side; toes strong, the outer slightly, the inner decidedly, shorter than middle toe, the stout hallux about as long as inner toe. Wing four times as long as exposed culmen, the outermost primary longest. Tail nearly two-thirds as long as wing, deeply emarginate, the rectrices broad, with rounded tip.

*Range*.—Mountains of southern Mexico and Guatemala. (Monotypic.)

## LAMPROLAIMA RHAMI (Lesson).

## GARNET-THROATED HUMMING BIRD.

*Adult male*.—Above bright metallic green or bronze-green, slightly duller and more decidedly bronzy posteriorly; tail entirely purplish black or very dark violet-purple; remiges and greater wing-coverts deep cinnamon-rufous or rufous-chestnut, margined terminally with purplish dusky, the longer primaries extensively of the latter color terminally, the inner secondaries partly dull bronze-greenish; a small white postocular spot; loreal, auricular, suborbital, and malar regions and sides of lower throat velvety black in position *a*, glossed with purplish bronze in position *c*; chin and throat bright metallic reddish purple or purplish red (varying from solferino to nearly crimson); chest and upper breast rich metallic violet or violet-blue in position *a*, more decidedly violet in position *b*, much duller and more greenish in position *c*; rest of under parts grayish black or dusky, the breast, sides, and flanks strongly glossed with metallic bronze-green, the abdomen more slaty; under tail-coverts dull blue-black or purplish



black, more or less distinctly margined with grayish white; femoral tufts and very inconspicuous (mostly concealed) tuft between sides and upper rump grayish white; bill black; iris dark brown; feet dusky; length (skins), 113–127 (120); wing, 73.5–81 (77.2); tail, 45–51.5 (47.5); culmen, 15–19 (17.9).<sup>a</sup>

*Adult female*.—Above similar to the adult male, but the green slightly more bronzy, especially on pileum; rufous-chestnut of remiges and greater wing-coverts more restricted, the dusky purplish or bronzy brown proportionally more extended; lateral rectrices tipped, more or less broadly, with brownish gray, all the rectrices except middle pair narrowly edged with the same; under parts deep sooty brown (dark broccoli or hair brown), the chest usually tinged with buffy brown or cinnamon, the sides and flanks glossed or spotted with metallic green, the breast sometimes faintly glossed with bluish green or greenish blue, the throat often with an admixture of metallic reddish purple feathers; femoral tufts white, as in adult male; under tail-coverts grayish dusky or sooty, more or less distinctly margined with whitish; bill, etc., as in adult male; length (skins), 97–113 (109); wing, 64–67.5 (66.2); tail, 40–44 (41.7); culmen, 15.5–18.5 (16.7).<sup>b</sup>

Highlands of southern Mexico, in States of Vera Cruz (Jalapa; Coátepec; Jico; Córdoba; Orizaba; Miradór; Cofre de Perote), Mexico ("near City of Mexico"), Guerrero (Chilpancingo; Omilteme), Oaxaca (La Parada; Tonagua; Totóntepec; Mount Zempoáltepec; near Oaxaca City) and Chiapas (San Cristóbal) and Guatemala (Santa Maria and San Martín, Quezaltenango; El Rincón, San Marcos; Calderas, Volcán de Fuego; Volcán de Agua; Chilasco; Cobán; Cajabón; Guatemala City; above Tecpám).

*O[rnismia] rhami* LESSON, Rev. Zool., i, 1838, 315 (Mexico).

*Ornysmia rhami* DELATTRE and LESSON, Rev. Zool., ii, 1839, 13.

*M[ellisuga] rhami* GRAY, Gen. Birds, i, Dec., 1848, 112.

[*Lampornis*] *rhami* BONAPARTE, Consp. Av., i, 1850, 72 (Mexico).

[*Delattria*] *rhami* BONAPARTE, Rev. et Mag. de Zool., 1854, 353.

<sup>a</sup> Twenty-three specimens.

<sup>b</sup> Nine specimens.

| Locality.                                                           | Wing. | Tail. | Ex-<br>posed<br>culmen. |
|---------------------------------------------------------------------|-------|-------|-------------------------|
| MALES.                                                              |       |       |                         |
| Seven adult males from State of Vera Cruz.....                      | 77.3  | 47.3  | 17.3                    |
| Seven adult males from State of Oaxaca.....                         | 76.4  | 46.7  | 17.9                    |
| Nine adult males from State of Chiapas (1) and Guatemala (8).....   | 77.8  | 48.4  | 18.2                    |
| FEMALES.                                                            |       |       |                         |
| Five adult females from southern Mexico (Vera Cruz and Oaxaca)..... | 66.3  | 41.9  | 16.5                    |
| Four adult females from Guatemala.....                              | 66    | 41.5  | 16.9                    |

- Delattria rhami* SCLATER, Proc. Zool. Soc. Lond., 1856, 287 (Mexico); 1858, 297 (Oaxaca); 1859, 367 (Jalapa, Vera Cruz).  
 [*Heliodoxa*.] *δ. Lamprolaima rhami* REICHENBACH, Aufz. der Colibr., 1854, 9.  
 [*Heliodoxa*] *rhami* REICHENBACH, Troch. Enum., 1855, 6, pl. 746, figs. 4712, 4713.  
*Lamprolæma rhami* GOULD, Mon. Troch., pt. xi, May, 1866 (vol. ii, 1861, pl. 61); Introd. Troch., oct. ed., 1861, 59.—SCLATER and SALVIN, Ibis, 1859, 129 (Guatemala).—SALVIN, Ibis, 1859, 468 (Calderas, Volcán de Fuego, Guatemala); 1860, 196 (Calderas); Cat. Birds Brit. Mus., xvi, 1892, 314 (Cofre de Perote, Coátepec, Jalapa, and Córdoba, Vera Cruz; Omilteme, Guerrero; Tonagua and Totóntepec, Oaxaca; Santa Maria and San Martín, in Quezaltenango, Volcán de Fuego, Chilasco, and Cajabón, Guatemala).—SCLATER, Cat. Am. Birds, 1862, 289; Proc. Zool. Soc. Lond., 1864, 176 ("near City of Mexico").—ELLIOT, Classif. and Synop. Troch., 1879, 32.—SUMICHRIST, La Naturaleza, v, 1881, 250 (alpine region, Orizaba).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 338.—RIDGWAY, Proc. U. S. Nat. Mus., iii, 1880, 310 (Orizaba and Miradór, Vera Cruz; Guatemala City).—DEARBORN, Pub. 125, Field Mus. N. H., 1907, 99 (above Tecpám, Guatemala).  
 [*Lamprolæma*] *rhami* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 80.—SHARPE, Hand-list, ii, 1900, 123.  
 L[*amprolæma*] *rhami* CABANIS and HEINE, Mus. Hein., iii, 1860, 30 (Guatemala).—HARTERT, Das Tierreich, Troch., 1900, 117.  
*Lamprolaima rhami* D'Oca, La Naturaleza, iii, 1875, 25 (Coátepec, Córdoba, and Orizaba, Vera Cruz); Troq. de Mex., 1875, 16, pl. (2), fig. 8.—RIDGWAY, Man. N. Am. Birds, 1887, 304, in text.  
*Lamprolæma rhami* BOUCARD, Notes quelques Troch., 1873, 7 (Jalapa; La Parada; Cobán; habits); Ann. Soc. Linn. Lyon, xx, 1874, 275; Liste Ois. récol. Guat., 1878, 45; Gen. Hum. Birds, 1895, 216.—MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., ii, livr. 3, 1876, 218 (Mexico; Guatemala); iv, livr. 3, 1878, 206 (synonymy).—HARTERT (E. and C.), Novit. Zool., i, 1894, 63 (Chilpancingo, Guerrero, 6,000–8,000 ft.).  
*Clytolaema rhami* MULSANT and VERREAUX, Classif. Troch., 1866, 59.  
 [*Trochilus*] *rhami* GRAY, Hand-list, i, 1869, 140, no. 1805.  
*Lamprolæma rami* MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., ii, livr. 2, 1875, pl. 24.

### Genus CYANOLÆMUS Stone.

*Cyanolæmus* <sup>a</sup> STONE, Auk, xxiv, April, 1907, 197, in text. (Type, *Ornismyia clemenciæ* Lesson.)

Large Trochilidæ (length about 125 mm.) with bill longer than head, straight, slender; wing three times as long as exposed culmen; tail three-fifths as long as wing, slightly emarginate or (in female) double-rounded; feathered tarsi, and rather dull coloration, the under parts grayish (adult male with throat metallic blue).

Bill longer than head, straight, terete; culmen rounded except basally, where contracted into a narrow ridge; tomia smooth; mandible with a broad longitudinal median groove. Nasal operculi broad and convex posteriorly (when edge descends to or below the tomia), only its upper-posterior portion covered by frontal feathering,

<sup>a</sup> From *κυανος* blue, and *λαμμος*, throat. (Stone.)

the latter extending nearly as far as its anterior end, forming a very short point or antia on each side of culmen. Tarsus clothed, except behind, with short feathers; lateral toes about equal in length, slightly shorter than middle toe, the hallux about as long as lateral toes. Wing more than three times as long as exposed culmen in adult male, less than three times as long in adult female, the outermost primary longest. Tail about three-fifths as long as wing, slightly emarginate in adult male, slightly double-rounded (with lateral rectrices shorter than middle pair) in adult female.

*Coloration*.—Above rather dull bronze-green or greenish bronze, duller (grayish brown) on pileum, the tail dull bluish black, with lateral rectrices broadly tipped with white; a white postocular streak and whitish rictal streak, inclosing a dusky auricular space; under parts gray, the adult male with feathers of throat tipped with metallic blue.

*Range*.—Southwestern United States, near Mexican border, to Guatemala. (Monotypic.)

#### CYANOLEMUS CLEMENCIE (Lesson).

##### BLUE-THROATED HUMMING BIRD.

*Adult male*.—Above rather dull metallic bronze-green, passing into olive-bronze or bronzy olive on rump, where the feathers have narrow terminal margins of pale brownish gray or buffy grayish; upper tail-coverts dusky (sometimes faintly glossed with greenish or bluish), narrowly and indistinctly margined with paler; tail black, faintly glossed with bluish, the outermost rectrix with terminal third (or less) abruptly white, the second less extensively tipped with white, the third usually with a small median white streak or mark (usually more or less fusiform or diamond-shaped) near tip; remiges dark brownish slate color or dusky, very faintly glossed with purplish; a conspicuous white postocular streak, extending obliquely backward and downward behind upper posterior margin of auricular region, the latter, together with the suborbital and loreal regions, plain dusky; a more or less distinct rictal streak of whitish (this sometimes obsolete); chin and throat metallic blue (varying from a greenish to a slightly violet hue), the feathers very narrowly and indistinctly margined with brownish gray and with concealed portion of the latter color; rest of under parts plain deep brownish gray or brownish slate color, the under tail-coverts broadly margined with white; femoral and anal tufts and tuft on each side of rump white; bill dull black; iris dark brown; feet dusky; length (skins), 116–136 (119); wing, 72–79 (76.7); tail, 43.5–50 (46.6); culmen, 21.5–25 (23.3).<sup>a</sup>

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<sup>a</sup> Twenty-three specimens.



*Adult female*.—Similar to the adult male, but blue of throat replaced by the general dull brownish gray of under parts; length (skins), 111–126 (118); wing, 68.5–71 (69.7); tail, 41–45.5 (43.2); culmen, 24–27.5 (25.8).<sup>a</sup>

Highlands of Mexico, in States of Tamaulipas (Galindo), Chihuahua (Sierra Madre), Durango (Ciudad Durango; Sierra Valparaiso; Rancho Baillón; Arroyo del Buéy), Zacatecas (Sierra Valparaiso), Jalisco (Barranca Ibarra), Michoacán (Mount Tancitaro; Nahuatzín; Patzcuaro), Guerrero (Omilteme), Oaxaca (La Parada; Cerro San Felipe), Puebla (Tehuacán), Mexico (Ajusco; Amecameca; Ixtapalapa; Rio Frio, Ixtaccihuatl; Tetelco; Hacienda Eslava), Morelos (Cuernavaca), Vera Cruz (Córdova; Coátepec; Las Vegas; Jalapa; Miradór; Orizaba), Tlaxcala (Huehuantla), Guanajuato, San Luís Potosí (Sierra San Luís Potosí), and Nuevo León (Santa Catarina), and northward into western Texas (Chisos Mountains) and southern Arizona (Huachuca, San Luís, Chiricáhua, and Santa Catalina mountains).

*Ornismya clemenciae* LESSON, Hist. Nat. Ois.-Mouch., 1829, pp. xlv, 216, pl. 80 (Mexico; coll. Rivoli); Suppl. Ois.-Mouch., 1830–31, 115, pl. 8; Index Gen. et Synop. Troch., 1832, p. xviii; Traité d'Ois., 1831, 279.

[*Coeligena* γ. *Coeligena*] *clemenciae* REICHENBACH, Aufz. der Colibr., 1854, 7.

[*Coeligena*] *clemenciae* REICHENBACH, Troch. Enum., 1855, 3, pl. 687, figs. 4516, 4517.—MULSANT, Ann. Soc. Linn. Lyon, xxii, 1876, 203.

*Cœligena clemenciae* GOULD, Introd. Troch., oct. ed., 1861, 59.—SCLATER, Cat. Am. Birds, 1862, 289.—BOUCARD, Notes quelques Troch., 1873, 6 (Oaxaca; habits); Gen. Hum. Birds, 1895, 217.—MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., i, livr. 3, 1874, 180; iv, livr. 3, 1877, 158.—VILLADA, La Naturaleza, ii, 1875, 350 (Valley of Mexico).—ELLIOT, Classif. and Synop. Troch., 1879, 30.—RIDGWAY, Proc. U. S. Nat. Mus., iii, 1880, 310 (Miradór, Vera Cruz); Rep. U. S. Nat. Mus. for 1890 (1891), 324, pl. 36 (monogr.; habits).—SUMICHRIST, La Naturaleza, v, 1881, 250 (Orizaba).—BREWSTER,

<sup>a</sup> Eight specimens.

| Locality.                                                             | Wing. | Tail. | Ex-<br>posed<br>culmen. |
|-----------------------------------------------------------------------|-------|-------|-------------------------|
| MALES.                                                                |       |       |                         |
| Ten adult males from Arizona.....                                     | 76.1  | 45.8  | 22.9                    |
| Five adult males from southwestern Texas (Chisos Mountains).....      | 76.1  | 45.9  | 23.1                    |
| Four adult males from Michoacán.....                                  | 77.9  | 48.2  | 24.2                    |
| Two adult males from Vera Cruz.....                                   | 77.5  | 48.2  | 23.7                    |
| One adult male from Oaxaca.....                                       | 79    | 49    | 24.5                    |
| FEMALES.                                                              |       |       |                         |
| Five adult females from Arizona including Mexican boundary line)..... | 69.8  | 42.5  | 25.4                    |
| One adult female from Jalisco.....                                    | 69.5  | 44    | 27.5                    |
| One adult female from Oaxaca.....                                     | 68.5  | 43.5  | 26.5                    |
| One adult female from Vera Cruz.....                                  | 71    | 45.5  | 25.5                    |

- Auk, ii, 1885, 85 ("Camp Lowell," i. e., Santa Catalina Mts., Arizona), 199 (correction of locality).—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886, no. 427.—SALVIN, Cat. Birds Brit. Mus., xiv, 1892, 304.—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 331.—JOUY, Proc. U. S. Nat. Mus., xvi, 1893, 784 (Cuernavaca, Morelos).—BENDIRE, Life Hist. N. Am. Birds, ii, 1895, 190.—COX, Auk, xii, 1895, 357 (Mt. Orizaba, 11,000 ft.).—CLARK (J. H.), Auk, xvii, 1900, 294 (Las Vegas, Vera Cruz; descr. nest and eggs).—BAILEY (Florence M.), Handb. Birds W. U. S., 1902, 234, fig. 304.—OBERHOLSER, Auk, xix, 1902, 300 (Chisos Mts., w. Texas).—BRENINGER, Auk, xx, 1903, 435 (Huachuca Mts., Arizona; descr. nest and eggs).—SWARTH, Pacific Coast Avifauna, no. 4, 1904, 17 (Huachuca Mts., summer res.).—MILLER (W. De W.), Bull. Am. Mus. N. H., xxii, 1906, 167 (Rancho Baillón and Arroyo del Buéy, Durango; measurements).—PHILLIPS, Auk, xxviii, 1911, 78 (Galindo, Tamaulipas).
- [*Cœligena*] *clemenciæ* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 80.—SHARPE, Hand-list, ii, 1900, 122.
- C[*œligena*] *clemenciae* CABANIS and HEINE, Mus. Hein., iii, 1860, 15 (Mexico).—HARTERT, Das Tierreich, Troch., 1900, 114.
- Coeligena clemenciae* WILLARD, Condor, xiii, 1911, 46–48, figs. 19–22 (Huachuca Mts.; descr. nest and eggs, etc.).
- C[*œligena*] *clemenciæ* RIDGWAY, Man. N. Am. Birds, 1887, 310.
- Cœligena clementiæ* DUGÈS, La Naturelle, i, 1870, 141 (Guanajuato).
- M[*ellisuga*] *clemenciæ* GRAY, Gen. Birds, i, Dec., 1848, 112.
- Campylopterus clemenciæ* JARDINE, Naturalists' Libr., Humming-Birds, ii, 1833, 154.
- [*Delattria*] *clemenciae* BONAPARTE, Consp. Av., i, 1850, 70.
- Delattria clemenciæ* GOULD, Mon. Troch., pt. ix, 1855 (vol. ii, 1861, pl. 60).—SCLATER, Proc. Zool. Soc. Lond., 1856, 287 (Mexico); 1858, 297 (Oaxaca); 1859, 367 (Jalapa).—D'OCA, La Naturelle, iii, 1875, 100; Troq. de Mex., 1875, 30, pl. (5), fig. 20.
- [*Lampornis*] *clemencia* BONAPARTE, Rev. et Mag. de Zool., 1854, 251.
- Cyanolæmus clemenciæ* AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Auk, xxv, July, 1908, 374; Check List, 3d ed., 1910, 202.
- Coeligena clementiæ* SIMON, Cat. Troch., 1897, 25.
- [*Trochilus*] *topiltzin* DE LA LLAVE, Registro Trimestre, ii, no. 5, Jan., 1833, 49 (Mexico: see Richmond, Auk, xvi, 1899, 325).

#### Genus LAMPORNIS Swainson.

- Lampornis* SWAINSON, Philos. Mag., n. s., i, June, 1827, 442. (Type, by monotypy, *L. amethystinus* Swainson.)
- Delattria* BONAPARTE, Consp. Av., i, 1850, 70. (Type, *Ornismya henrica* Lesson and Delattre=*Lampornis amethystinus* Swainson.)
- Chariessa* HEINE, Journ. für Orn., May, 1863, 178. (Type, *Ornismya henrica* Lesson and Delattre=*Lampornis amethystinus* Swainson.)
- Himelia* MULSANT, Ann. Soc. Linn. Lyon, n. s., xxii, 1876, 203 (Cat. Ois.-Mouch., p. 7). (Type, as fixed by Elliot, 1879, *Ornismya henrica* Lesson and Delattre=*Lampornis amethystinus* Swainson.)

Large Trochilidæ (length about 120–125 mm.) resembling *Cyanolæmus* but bill relatively more depressed and broader basally, and very faintly decurved, tail more deeply emarginate and without

white tips to lateral rectrices, the adult male with throat purple or purplish red instead of blue.

Bill longer than head, depressed, very faintly decurved; culmen rounded except basally, where contracted into a narrow ridge; maxillary tomium very minutely serrate terminally; mandible with a lateral median groove. Nasal operculum rather narrow (its convex edge not descending to tomium), the posterior and inner portions covered by frontal feathering, which extends not quite to anterior end of the operculi, forming a very short point or antia on each side of mesorhinium. Tarsus clothed with short feathers, except lower and extreme posterior portions; middle and outer toes nearly equal in length, the inner slightly shorter, the hallux about as long as inner toe. Wing about three times as long as exposed culmen, the outermost primary longest. Tail about three-fifths as long as wing, rather deeply emarginate in adult male, slightly double-rounded in adult female, the rectrices firm, with rounded tip.

*Coloration*.—Above metallic bronze-green or greenish bronze, duller on rump and upper tail-coverts, the tail blackish with tips of outer rectrices grayish; a dull whitish postocular streak and a similar (or buffy) rictal one, enclosing a broader auricular space of dusky; under parts brownish gray, adult males with feathers of throat broadly tipped with violet, purple or rosy.

*Range*.—Highlands of Mexico and Guatemala. (Three species.)

#### KEY TO THE SPECIES AND SUBSPECIES OF LAMPORNIS.

- a. Throat metallic reddish purple, purple, violet, or violet-blue. (*Adult males*.)
  - b. Throat purple to reddish or pinkish purple. (*Lampornis amethystinus*.)
    - c. Throat reddish or pinkish purple, the feathers more broadly and distinctly margined with whitish; under parts paler; averaging larger, with longer bill (wing averaging 67.6, tail 42.3, culmen 21.5). (Southeastern Mexico.)  
*Lampornis amethystinus amethystinus*, adult male (p. 496).
    - cc. Throat magenta purple, the feathers more narrowly and indistinctly margined with pale grayish; under parts darker; averaging smaller, with shorter bill. (Average measurements less than the above.)
    - d. Dusky suborbital and auricular area less blackish and white postocular streak duller; averaging slightly larger (wing 68, tail 42.2, culmen 20). (Western Mexico.)  
*Lampornis amethystinus brevisrostris*, adult male (p. 497).
    - dd. Dusky suborbital and auricular area more blackish and postocular streak purer white; averaging slightly smaller (wing 65.2, tail 39.5, culmen 19.5). (Guatemala and Chiapas.)  
*Lampornis amethystinus salvini*, adult male (p. 498).
  - bb. Throat violet or violet-blue.
    - c. Throat violet; green of upper parts less bronzy. (Mountains of central Guerrero.).....*Lampornis margaritæ*, adult male (p. 499).
    - cc. Throat violet-blue (royal purple or more bluish); green of upper parts more bronzy. (Mountains of eastern Guerrero to central Oaxaca.)  
*Lampornis pringlei*, adult male (p. 500).



aa. Throat brownish gray, more or less strongly suffused with buffy or cinnamon.

(*Adult females.*<sup>a</sup>)

b. Green of upper parts less bronzy; throat less strongly cinnamomeous.

*Lampornis margaritæ*, adult female (p. 499).

bb. Green of upper parts more bronzy; throat more strongly cinnamomeous.

*Lampornis pringlei*, adult female (p. 500).

### LAMPORNIS AMETHYSTINUS AMETHYSTINUS Swainson.

#### CAZIQUE HUMMING BIRD.

*Adult male*.—Above metallic bronze-green, greenish bronze, or bronze, usually duller (sometimes faintly metallic olive) on rump, the feathers of pileum usually darker centrally; upper tail-coverts dull black, usually faintly glossed with bluish; tail black, very faintly glossed with bluish, the lateral rectrices tipped with brownish gray; remiges dusky, faintly glossed with violaceous; loreal, suborbital, and auricular regions brownish black or dusky, the last margined above by a postocular (supra-auricular) line of white or grayish white, the first and second margined beneath by a rictal streak (more or less distinct) of cinnamon or cinnamon-buff; chin grayish, usually more or less suffused with cinnamon or buffy, the feathers slightly darker centrally; throat bright metallic reddish purple (solferino to wine purple), the feathers conspicuously margined with pale buffy gray or grayish white, producing a distinctly squamate effect; rest of under parts brownish gray, the sides and flanks overlaid by metallic bronze-green, greenish bronze, or bronze; under tail-coverts deeper brownish gray centrally, broadly margined with dull white or grayish white; femoral and lumbar tufts white; bill dull black, the mandible sometimes brownish; iris dark brown; feet pale brownish (in dried skins), the claws and end of toes darker; length (skins), 109–121 (114); wing, 65–71 (67.6); tail, 39–45 (42.3); culmen, 20–23 (21.5).<sup>b</sup>

*Adult female*.—Similar to the adult male, but pileum darker and duller (sometimes dusky, faintly glossed with bronze-green or bronzy); chin and throat dull cinnamon (the feathers abruptly dusky grayish basally), and sides and flanks very faintly, if at all, glossed with metallic green or bronze; tips of lateral rectrices paler gray and more sharply defined.

Southeastern Mexico, in States of Mexico (Temascáltepec; Valley of Mexico; Hacienda Eslava), Hidalgo (Reál del Monte), Vera Cruz (Jalapa; Córdoba; Coátepec; Montañas de Orizaba; Playa Vicente), and Oaxaca (Oaxaca; Mount Zempoáltepec; Totóntepec).

<sup>a</sup> No adult female of *L. amethystinus*, in any of its forms, is available at the time of preparing this "Key;" and since the differences between the females of *L. margaritæ* and *L. pringlei*, as given above, are based on a single specimen of each they may not hold good.

<sup>b</sup> Nine specimens.

- Lampornis amethystinus* SWAINSON, Philos. Mag., n. s., i, June, 1827, 442 Temascaltepec, Real del Monte, Mexico; Bullock coll'n).
- D[elatria] amethystina* SIMON, Rev. Franç. d'Orn., no. 1, May, 1909, 10, in text.
- Ornismya henrica* LESSON and DELATTRE, Rev. Zool., 1839, 17 (Coátepec, near Jalapa, Vera Cruz, Mexico).
- T[opaza] henrica* GRAY, Gen. Birds, i, Dec., 1848, 110.
- [*Topaza*] *henrica* GRAY, Hand-list, i, 1869, 134, no. 1726.
- [*Delatria*] *henrica* BONAPARTE, Consp. Av., i, 1850, 70.
- [*Delatria*] *henrici* BONAPARTE, Rev. et Mag. de Zool., 1854, 253.
- Delatria henrica* DE OCA, Los Colibris Mex., 1875, 23.
- [*Heliodoxa*  $\delta$ . *Lamprolaima*] *henrica* REICHENBACH, Aufz. der Colibr., 1854, 9.
- [*Heliodoxa*] *henrica* REICHENBACH, Troch. Enum., 1855, 6, pl. 742, figs. 4701-4703.
- D[elatria] henrica henrica* RIDGWAY, Proc. Biol. Soc. Wash., xxi, Oct. 20, 1908, 195, in text.
- Cæligena henrica* FERRARI-PEREZ, Proc. U. S. Nat. Mus., ix, 1886, 157 (Jalapa).
- C[æligena] henrica* RIDGWAY, Man. N. Am. Birds, 1887, 310, part (Mexico); Rep. U. S. Nat. Mus. for 1890 (1891), 324, part (Mexico).
- [*Cæligena*] *henrici* Mulsant, Ann. Soc. Linn. Lyon, n. s., xxii, 1876, 203.—SIMON, Cat. Troch., 1897, 25.
- [*Cæligena*] *henrici* SHARPE, Hand-list, ii, 1900, 122, part.
- Delatria henrici* GOULD, Mon. Troch., pt. viii, Oct., 1854 (vol. ii, 1861, pl. 62); Introd. Troch., oct. ed., 1861, 60.—SCLATER, Proc. Zool. Soc. Lond., 1856, 287 (Mexico); 1858, 297 (Oaxaca); 1859, 367 (Jalapa), 386 (Totóntepec, Oaxaca); Cat. Am. Birds, 1862, 289, part (in synonymy).—VILLADA, La Naturaleza, ii, 1875, 351 (Valley of Mexico).—HERRERA, La Naturaleza, (2) i, 1891, 322 (Valley of Mexico).—SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 308, part (Jalapa, Montañas de Orizaba, and Coátepec, Vera Cruz; Valley of Mexico).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 335, part (Hacienda Eslava, Jalapa, Montañas de Orizaba, and Playa Vicente, Vera Cruz; Valley of Mexico; Totóntepec, Oaxaca).—BOUCARD, Gen. Hum. Birds, 1895, 218, part (Mexico).
- Delatria henrici* D'OCA, Los Colibris Mex., 1875, pl. 4, fig. 14.
- [*Delatria*] *henrici* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 80, part.
- C[œligena] henrici* CABANIS and HEINE, Mus. Hein., iii, 1860, 15, footnote, part (Mexico).
- Coeligena henrici* BOUCARD, Notes quelques Troch., 1873, 7 (Córdova, Jalapa, and Playa Vicente, Vera Cruz); Ann. Soc. Linn. Lyon, xx, 1874, 275 (Córdova).—MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., i, livr. 3, 1874, 182, part (Mexico).—ELLIOT, Classif. and Synop. Troch., 1879, 30 part (Mexico).
- Coeligena henrici* MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., iv, livr. 2, 1877, 159.
- C[hariessa] henrici* HEINE, Journ. für Orn., 1863, 178 (synonymy).
- Lampornis henrici* MULSANT and VERREAUX, Classif. Troch., 1866, 24.
- C[œligena] henrica (typica)* HARTERT, Das Tierreich, Troch., 1900, 114, part (Mexico).

### LAMPORNIS AMETHYSTINUS BREVIROSTRIS (Ridgway).

#### SHORT-BILLED CAZIQUE.

Similar to *L. a. amethystinus*, but bill relatively shorter, throat darker and less pinkish purple, color of under parts darker and more uniform (deep mouse gray or brownish slate-gray), and feathers of throat with whitish margins much narrower and less distinct.

*Adult male*.—Length (skins), 113–118 (116); wing, 66–70 (68); tail, 40.5–44 (42.2); culmen, 19–21 (20).<sup>a</sup>

Highlands of western Mexico, in States of Jalisco (San Sebastián) and Colima (Sierra Nevada) and Territory of Tepic (Santiago).

(?) *Delattria henrici* (not *Ornismyia henrica* Lesson and Delattre?) SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 308, part (Sierra Nevada de Colima).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 335, part (Sierra Nevada de Colima).

[*Cœligena*] *henrici* SHARPE, Hand-list, ii, 1900, 122, part.

*Delattria henrica brevirostris* RIDGWAY, Proc. Biol. Soc. Wash., xxi, Oct. 20, 1908, 195 (San Sebastian, Jalisco; coll. U. S. Nat. Mus.).

### LAMPORNIS AMETHYSTINUS SALVINI (Ridgway).

#### GUATEMALAN CAZIQUE.

Much darker, both above and below, than *L. a. amethystinus*. Similar in coloration to *L. a. brevirostris*, but with dusky auricular-suborbital area much darker (brownish black), white postocular (supra-auricular) area broader, pure white, and margined above by a black line; smaller than either *L. a. amethystinus* or *L. a. brevirostris*.

*Adult male*.—Length (skins), 106–116 (111); wing, 63.5–67 (65.2); tail, 38.5–40 (39.5); culmen, 19–20 (19.5).<sup>b</sup>

Highlands of Guatemala (Dueñas; Calderas, Volcán de Fuego; Totonicapám; El Rincón, San Marcos; San Martín and Cuipaché, Quezaltenango; State of Chiapas (San Cristóbal), southern Mexico?

*Delattria henrici* (not *Ornismyia henrica* Lesson and Delattre) GOULD, Mon. Troch., pt. viii, Oct., 1854 (vol. ii, 1861, pl. 62), part (Guatemala); Introd. Troch., oct. ed., 1861, 60, part (Guatemala).—SCLATER and SALVIN, Ibis, 1859, 129 (Guatemala).—SALVIN, Ibis, 1860, 196 (Dueñas, Guatemala); 1862, 96 (Volcán de Fuego and Calderas, Guatemala); Cat. Birds Brit. Mus., xvi, 1892, 308, part (Volcán de Fuego, Calderas, Totonicapám, Quezaltenango, El Rincón, etc., Guatemala).—SCLATER, Cat. Am. Birds, 1862, 289, part (Guatemala; excl. syn. part).—MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., i, livr. 3, 1874, 182, part (Guatemala).—BOUCARD, Liste Ois. récol. Guat., 1878, 45; Gen. Hum. Birds, 1895, 218, part (Guatemala).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 335, part (Cuipaché, San Martín, etc., Guatemala).

#### <sup>a</sup> Two specimens.

I am somewhat doubtful as to the validity of this form, which at present rests on two specimens. In these the color of the throat is distinctly different from that in the only two adult males of true *L. amethystinus* now before me (from Vera Cruz), being a more decided purple or less pinkish (nearly phlox purple, the color in *L. a. amethystinus* being rather more pinkish than solferino). A specimen from San Cristóbal, Chiapas (provisionally referred to *L. a. salvini*, though by no means typical of the latter) has the throat colored precisely as in these specimens from western Mexico, while one from Mt. Zempoaltepec, in northeastern Oaxaca, has it colored very much as in true *L. amethystinus*. Before the geographic variations in this species and the character of relationship between *L. amethystinus* and the two local Guerrero forms (*L. margaritæ* and *L. pringlei*) can be satisfactorily understood, a much larger number of specimens must be carefully compared.

#### <sup>b</sup> Two specimens, one of them (from San Cristóbal, Chiapas) not typical.



- [*Delattria*] *henrici* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 80, part (Guatemala).
- [*Coeligena*] *henrici* CABANIS and HEINE, Mus. Hein., iii, 1860, 15, footnote, part (Guatemala).
- Coeligena henrici* MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., i, livr., 3, 1874, 182, part (Guatemala).—ELLIOT, Classif. and Synop. Troch., 1879, 30, part (Guatemala).—RIDGWAY, Proc. U. S. Nat. Mus., iii, 1880, 310 (Guatemala).
- [*Coeligena*] *henrica* RIDGWAY, Man. N. Am. Birds, 1887, 310, part (Guatemala); Rep. U. S. Nat. Mus. for 1890 (1891), 324, part (Guatemala).
- [*Coeligena*] *henrici* SHARPE, Hand-list, ii, 1900, 122, part.
- Lampornis amethystinus* (not of Swainson) DEARBORN, Pub. 125, Field Mus. N. H., 1907, 99 (above Tecpám, Guatemala, 9,600 ft.).
- [*Coeligena*] *henrica* (*typica*) HARTERT, Das Tierreich, Troch., 1900, 114, part (Guatemala).
- Delattria henrica salvini* RIDGWAY, Proc. Biol. Soc. Wash., xxi, Oct. 20, 1908, 195 (Calderas, Volcán de Fuego, Guatemala, 7,000–8,000 ft.; coll. Am. Mus. N. H.).

**LAMPORNIS MARGARITÆ (Salvin and Godman).**

**MARGARET'S CAZIQUE.**

Similar to *L. amethystinus*, but much darker; adult male with throat metallic violet (violet to royal purple) instead of reddish purple, the metallic feathers without distinct grayish or whitish margins.

*Adult male*.—Above metallic bronze-green, becoming dull bronze on rump; upper tail-coverts and tail black, faintly glossed with bluish, the lateral rectrices broadly (but not abruptly) tipped with dark brownish gray; remiges brownish slate or dusky, very faintly glossed with purplish; suborbital and auricular regions dusky, the latter margined above by a broad postocular (supra-auricular) streak of dull white, the former margined below by an indistinct rictal streak of cinnamonaceous; chin brownish gray, the feathers darker centrally; throat bright metallic violet (varying from violet or violet-purple to royal purple), the feathers narrowly margined with pale grayish; rest of under parts plain deep mouse gray or brownish slate color, more or less glossed with bronze green, especially on chest, sides, and flanks, the under tail-coverts broadly margined with whitish; femoral and lumbar tufts white; bill dull black, the mandible sometimes more brownish; iris dark brown; feet pale brownish (in dried skins), the claws and terminal portion of toes darker; length (skins), 109–123 (118); wing, 67–69.5 (68.4); tail, 43.5–45 (44.2); culmen, 20–22 (21).<sup>a</sup>

*Adult female*.—Similar to the adult male, but chin and throat with feathers deep mouse gray centrally, broadly margined with pale cinnamon or buffy wood brown. (Differing from the adult female of *L. amethystinus* in decidedly larger size, darker and more uniform under parts, and more bronzy color of rump.) Length (skins), 99–113 (106); wing, 63–64 (63.5); tail, 41–41.5 (41.2); culmen, 21–23 (22).<sup>b</sup>

<sup>a</sup> Ten specimens.

<sup>b</sup> Two specimens.

Southwestern Mexico, in State of Guerrero (Chilpancingo; Omilteme).

*Delattria margaritæ* SALVIN and GODMAN, Ibis, April, 1889, 239 (Omilteme, Guerrero, alt. 8,000 ft.; coll. Salvin and Godman.)

*Delattria margaritæ* BOUCARD, Gen. Hum. B., 1895, 219 (Omilteme).

*C[œligena] margaritæ* RIDGWAY, Rep. U. S. Nat. Mus. for 1890 (1891), 324 (diagnosis, etc.).

*Delattria margarethæ* SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 336, pl. 54a, figs. 1, 2.—SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 310.

*Delattria margarethæ* HARTERT (E. and C.), Novit. Zool., i, 1894, 63 (Chilpancingo, Guerrero, 6,000–8,000 ft.).

[*Coeligena*] *margarethæ* SIMON, Cat. Troch., 1897, 25.

[*Coeligena*] *margarethæ* SHARPE, Hand-list, ii, 1900, 122.

[*Coeligena*] *henrica margarethæ* HARTERT, Das Tierreich, Troch., 1900, 115 (monogr.).

### LAMPORNIS PRINGLEI (Nelson).

#### PRINGLE'S CAZIQUE.

Similar to *L. margaritæ*, but color of upperparts much more bronzy, the adult male with pileum, hindneck, and back metallic bronze instead of bronze-green, and throat violet-blue instead of violet or violet-purple, the feathers with grayish margins much less distinct.

*Adult male*.—Forehead dull metallic coppery bronze, the feathers darker centrally; crown dusky metallic bronze-greenish; occiput, hindneck, back, scapulars, and wing-coverts metallic bronze (brighter and somewhat coppery on occiput and hindneck), passing into much duller bronzy, or olive-bronze, on rump; upper tail-coverts and tail black, faintly glossed with bluish, the lateral rectrices broadly, but not sharply, tipped with dark gray or slate color; remiges dusky, very faintly glossed with purplish; auricular region dusky, faintly glossed with bronze, margined above by a white postocular (supra-auricular) streak; a rectal streak of buffy, cinnamonaceous, or grayish brown; chin brownish gray, the feathers darker centrally; throat bright metallic violet-blue (hyacinth blue tinged with royal purple), the feathers without grayish margins, except on upper throat; rest of under parts deep mouse gray or brownish slate-gray, glossed laterally with bronze or coppery bronze, the under tail-coverts broadly margined with white; femoral and lumbar tufts white; bill dull black; iris dark brown; feet pale brownish (in dried skins), the claws and upper side of toes dusky; length (skins), 114–115 (114.7); wing, 68–69 (68.3); tail, 43.5–44 (43.7); culmen, 21–22 (21.3).<sup>a</sup>

*Adult female*.—Similar in coloration to adult females of *L. amethystinus* and *L. margaritæ*, but general color of upper parts bronze or greenish bronze instead of bronze-green; length (skin), 108; wing, 62; tail, 40.5; culmen, 23.<sup>b</sup>

<sup>a</sup> Three specimens.

<sup>b</sup> One specimen.

Southwestern Mexico, in States of Guerrero (mountains near Chilpancingo) and Oaxaca (15 miles west of Oaxaca City).

*Delattria pringlei* NELSON, Auk, xiv, Jan., 1897, 51 (Oaxaca City, Oaxaca, s. w. Mexico; coll. U. S. Nat. Mus.).

[*Cæligena*] *pringlei* SHARPE, Hand-list, ii, 1900, 122.

[*Oeligena*] *henrica pringlei* HARTERT, Das Tierreich, Troch., 1900, 115 (monogr.).

#### Genus OREOPYRA Gould.

*Oreopyra* <sup>a</sup> GOULD, Proc. Zool. Soc. Lond., 1860, 312; Introd. Trochil., 1861, 141. (Type, *O. leucaspis* Gould = *Trochilus* (—?) *castaneoventris* Gould.)

Medium-sized Trochilidæ (length about 90–110 mm.) closely related to *Lampornis* and *Cyanolæmus*, but with relatively shorter bill, nasal operculum narrower and more concealed, and more feathered tarsi; under parts not gray, and coloration more brilliant, the adult males green, white, or green and white beneath, with pure white, brilliant green, or violet throat-patch, usually with forehead and crown glittering green or blue, adult females with under parts light cinnamon-rufous or white.

Bill about as long as head, moderately slender, straight, terete; culmen rounded except basally, where contracted into a narrow ridge; tomia smooth; mandible with a lateral median groove. Nasal operculum rather narrow, its outer edge straight or but slightly convex basally, mostly hidden by frontal feathering, which extends about as far as anterior end of nostrils, forming a short point or antia on each side of mesorhinium. Tarsus clothed with short feathers, except posterior edge; inner toe very slightly shorter than middle toe, the outer toe still shorter, the hallux about as long as outer toe. Wing more than three times as long as culmen in adult males, about three times as long in females, the outermost primary longest. Tail about three-fifths as long as wing, rather deeply emarginate in adult males, slightly double-rounded or truncate in females, the rectrices moderately broad, rounded or subcuneate at tip.

*Coloration*.—Above metallic green, bronze-green or bronze, the upper tail-coverts sometimes dusky; tail plain gray, blackish passing into gray on lateral rectrices, or dull bronzy with paler tip in adult males (sometimes in females also), bronze-green with blackish tip or subterminal band and pale gray tip to lateral rectrices in females of some species. Adult males usually with forehead and crown glittering green or blue, a throat-patch of metallic violet or pure white or else throat spotted with bright metallic green, the remaining under parts mostly white (*O. hemileuca*, *O. sybillæ*, and *O. viridipallens*) or metallic green (in other species). Adult females with under parts light cinnamon-rufous, or white (*O. hemileuca*, *O. sybillæ*, and *O. viridipallens*).



*Range*.—Southern Mexico to western Panama, in higher mountains. (Seven species.)

The proper disposition of *Trochilus viridipallens* Bourcier and Mulsant which both Elliot and Hartert place in "*Cæligena*" (= *Cyanolæmus*)—both authors uniting *Cæligena* and "*Delattria*"—and its near relative, "*Delattria*" *sybillæ* Salvin, is a matter of difficulty and uncertainty; but I am convinced that unless a new genus is made for their accomodation they fit far better in *Oreopyra* than in "*Delattria*." The only alternative is to consider *Oreopyra* as also a synonym of "*Delattria*" = *Lampornis*.

KEY TO THE SPECIES AND SUBSPECIES OF OREOPYRA.

- a. Under parts mostly green or mostly white.
  - b. A conspicuous patch of white or purple on throat; pileum brilliantly metallic green.
    - c. Chest bright metallic green; chin white or purple, like throat.
      - d. Tail black or blue-black. (*Oreopyra castaneoventris*.)
        - e. Throat white; or if purple the feathers white beneath surface. (Volcan de Chiriquí, Panamá.)
          - Oreopyra castaneoventris castaneoventris*, adult male (p. 502).
        - ee. Throat metallic purple, the feathers gray beneath surface. (Costa Rica to western Panamá.)
          - Oreopyra castaneoventris calolæma*, adult male (p. 504).
        - dd. Tail gray (the throat white). (Southwestern Costa Rica.)
          - Oreopyra cinereicauda*, adult male (p. 506).
      - cc. Chest white; chin metallic green. (Costa Rica.)
        - Oreopyra hemileuca*, adult male (p. 507).
    - bb. No throat-patch of white or purple; pileum not brilliantly metallic.
      - c. Throat metallic green squamated or otherwise broken by white.
        - d. Chest and foreneck green like throat. (Nicaragua.)
          - Oreopyra sybillæ*, adult male (p. 508).
        - dd. Chest and foreneck white. (Guatemala and Chiapas.)
          - Oreopyra viridipallens*, adult male (p. 509).
      - cc. Throat white or buff, or mostly so.
        - d. Throat white; outermost rectrix pale gray.
          - Oreopyra viridipallens*, adult female (p. 510).
        - dd. Throat buff; outermost rectrix white, the inner web crossed by a sub-terminal bar of dusky gray. . . . . *Oreopyra sybillæ*, adult female (p. 509).
  - aa. Under parts tawny-ochraceous.
    - b. Lateral rectrices with a well-defined broad subterminal area of blackish.
      - Oreopyra castaneoventris castaneoventris*, adult female (p. 503).
      - Oreopyra castaneoventris calolæma*, adult female (p. 505).
    - bb. Lateral rectrices without a well-defined (if any) subterminal area of dusky.
      - Oreopyra cinereicauda*, adult female (p. 506).

OREOPYRA CASTANEOVENTRIS CASTANEOVENTRIS (Gould).

CHIRIQUÍ MOUNTAIN GEM.

*Adult male*.—Forehead and crown glittering metallic emerald green, varying to yellowish green and bluish green; rest of upper parts duller metallic bronze-green, becoming more bluish green or

dark metallic grass green on upper tail-coverts; tail dull blue-black; remiges dusky purplish brown, the inner secondaries mostly bronze-greenish, especially on outer webs; primary coverts dull black, faintly glossed with bronze-greenish; suborbital and auricular regions dusky bronze-green, the latter margined above by a conspicuous postocular streak of white; chin and throat uniform grayish white (the feathers dusky gray at extreme base), this white area with a sharply defined convex posterior outline, usually with some of the feathers round the margin tipped with metallic phlox purple or metallic blue, rarely with chin and throat entirely purple or violet superficially;<sup>a</sup> chest, sides of neck, and sides of breast bright metallic green (varying from emerald to golden), passing into duller and more bronzy green on flanks and into brownish gray on abdomen; under tail-coverts deep bronzy gray margined with paler gray; anal tufts grayish white; bill dull black; iris dark brown; feet grayish brown or dusky; length (skins), 99-108 (104); wing, 62-66 (64.3); tail, 35.5-38 (36.5); culmen, 18.5-21.5 (20.2).<sup>b</sup>

*Adult female*.—Above bright metallic green, usually more bronzy green anteriorly (sometimes distinctly so) and more bluish green on upper tail-coverts; middle rectrices much duller metallic green or bronze-green, the other rectrices similar for more than basal half, blackish subterminally or (pair next to middle rectrices) terminally, the two or three outer pairs rather broadly tipped with pale gray; remiges dusky, faintly glossed with violaceous; a blackish area on side of head, involving loreal and auricular regions (narrowly connected beneath eye), the auricular portion margined above by a broad streak of white or pale buffy extending from posterior angle of eye obliquely backward and downward; rictal and malar regions, chin, throat, and under parts of body plain tawny-ochraceous, paler on lower or median portion of abdomen; femoral tufts white; under tail-coverts dull white to pale tawny buff, with central portion pale grayish; bill black; iris dark brown; feet brownish or dusky (in dried skins); length (skins), 93-102 (96); wing, 56-59.5 (57.6); tail, 30.5-34 (32.2); culmen, 19.5-23 (21.3).<sup>c</sup>

Western Panamá (Cordillera de Chiriquí; Volcán de Chiriquí; Boquete).

*Trochilus* (—?) *castaneiventris* GOULD, Proc. Zool. Soc. Lond., 1850, 163 (Cordillera de Chiriquí, Panamá, 6,000 ft. alt.; coll. J. Gould).

[*Trochilus*] ? *castaneiventris* GRAY, Hand-list, i, 1869, 142, no. 1831.

[*Metallura*] *castaneiventris* REICHENBACH, Aufz. der Colibr., 1854, 8; Troch. Enum., 1855, 5.

*Adelomyia*? *castaneiventris* GOULD, Mon. Troch., vol. iii, 1861 (pt. x, Sept., 1855), pl. 203 (Cordillera of Chiriquí, 6,000 ft.).

<sup>a</sup> The feathers white immediately beneath the surface.

<sup>b</sup> Ten specimens.

<sup>c</sup> Nine specimens.

- Anthocephala? castaneiventris* GOULD, Introd. Troch., oct. ed., 1861, 115.—MULSANT and VERREAUX, Classif. Troch., 1866, 71; Hist. Nat. Ois.-Mouch., iii, livr. 2, 1876, 123; iv, livr. 3, 1878, 219.
- Oreopyra castaneiventris* SALVIN, Proc. Zool. Soc. Lond., 1867, 153 (Volcán de Chiriquí; synonym.; crit.); Ibis, 1869, 316 (crit.).
- O[reopyra] castaneiventris* SALVIN, Proc. Zool. Soc. Lond., 1864, 585.
- Oreopyra castaneiventris castaneiventris* BANGS, Proc. Biol. Soc. Lond., xix, July 30, 1906, 107 (crit.).
- Oreopyra leucaspis* GOULD, Proc. Zool. Soc. Lond., 1860, 312 (Volcán de Chiriquí, Panamá, 9,000–10,000 ft. alt.; coll. J. Gould); Mon. Troch., iv, pt. xxi, 1861, pl. 264; Introd. Troch., oct. ed., 1861, 141.—SALVIN, Proc. Zool. Soc. Lond., 1867, 153 (Volcán de Chiriquí); 1870, 205 (Volcán de Chiriquí; crit.); Cat. Birds Brit. Mus., xvi, 1892, 306.—LAWRENCE, Ann. Lyc. N. Y., ix, 1868, 125 (Volcán de Chiriquí).—FRANTZIUS, Journ. für Orn., 1869, 316 (Costa Rica; error!).—MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., iv, livr. 2, 1877, 160 (Volcán de Chiriquí); Suppl., 1885, pl. 55.—ELLIOT, Classif. and Synop. Troch., 1879, 33.—RIDGWAY, Proc. U. S. Nat. Mus., iii, 1880, 310 (Chiriquí).—ZELEDÓN, Cat. Aves de Costa Rica, 1882, 20; Anal. Mus. Nac. Costa Rica, i, 1887, 121.—SHARPE, Gould's Mon. Troch. Suppl., 1885.—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 332 (Cordillera de Chiriquí; Volcán de Chiriquí).—BOUCARD, The Hum. Bird, ii, 1892, 77 ("Veragua"); Gen. Hum. Birds, 1895, 221 (Volcán de Chiriquí).—SALVADORI and FESTA, Boll. Mus. Zool., etc., Torino, 1899, no. 339, 7 (Chiriquí).—BANGS, Proc. New Engl. Zool. Club, iii, 1902, 30 (Boquete de Chiriquí and Volcán de Chiriquí, 4,000–7,700 ft.).
- O[reopyra] leucaspis* SALVIN, Proc. Zool. Soc. Lond., 1864, 585; 1870, 206 (Volcán de Chiriquí; crit.).
- [Oreopyra] leucaspis* SCIATER and SALVIN, Nom. Av. Neotr., 1873, 80.—MULSANT, Ann. Soc. Linn. Lyon, xxii, 1876, 203.—SHARPE, Hand-list, iii, 1900, 123.
- O[reopyra] leucaspis (typica)* HARTERT, Das Tierreich, Troch., 1900, 116 (monogr.).
- Diphlogena leucaspis* MULSANT and VERREAUX, Classif. Troch., 1866, 61.
- [Trochilus] leucaspis* GRAY, Hand-list, i, 1869, 138, no. 1769.
- Oreopyra calolæma* (not of Salvin, 1864) SALVIN, Proc. Zool. Soc. Lond., 1870, 205 (Volcán de Chiriquí).—SALVADORI and FESTA, Boll. Mus. Zool., etc., Torino, xiv, 1899, no. 339, 7 (Chiriquí).—BANGS, Proc. New Engl. Zool. Club, iii, 1902, 30 (Boquete, Panamá, 4,000 ft.).
- O[reopyra] calolæma* SALVIN, Proc. Zool. Soc. Lond., 1870, 206, part (Volcán de Chiriquí; crit.).

### OREOPYRA CASTANEOVENTRIS CALOLÆMA (Salvin).

#### COSTA RICAN MOUNTAIN GEM.

Similar to *O. c. castaneoventris*, but adult male with chin and throat always metallic violet or purple,<sup>a</sup> the feathers gray, instead of white, immediately beneath the surface.<sup>b</sup>

*Young male*.—Upper parts, including tail, as in adult female; chin and throat dusky, the latter with a few tawny-ochraceous feathers along middle line, the dusky color gradually passing into

<sup>a</sup> Varying, in different specimens, from royal purple to phlox purple.

<sup>b</sup> The supposed difference in coloration of the upper parts in females mentioned by Salvin (Proc. Zool. Soc. Lond., 1870, 205, 206) proves to be inconstant; in fact does not, so far as I am able to see, exist in even a considerable proportion of specimens.



dull metallic bronze-green on lower throat, chest, and sides of breast; lower breast and abdomen tawny-ochraceous, passing into dull grayish on sides and flanks; under tail-coverts brownish gray broadly margined with dull white.

*Adult male*.—Length (skins), 87–113 (99); wing, 60.5–65 (61.7); tail, 29.5–37 (35.6); culmen, 18–20.5 (19.5).<sup>a</sup>

*Adult female*.—Length (skins), 91–107 (96); wing, 55–58.5 (57.5); tail, 30.5–34 (32.5); culmen, 20–23 (20.9).<sup>b</sup>

Highlands of Costa Rica (San José; La Palma de San José; Escazú; Las Cruces de Candelária; Cerro de la Candelária; Cartago; Azahár de Cartago; Naranjo de Cartago; Volcán de Irazú; Rancho Redondo; Peorsnada; Navarro; Coliblanco; Juan Viñas; Carrillo; La Hondura; Tenório; Copéy, Santa Maria de Dota; Dota Mountains) and western Panamá (Cordillera de Tolé; Cordillera del Chucu; Calovévora; Calobre).

*Oreopyra calolæma* SALVIN, Proc. Zool. Soc. Lond., 1864 (pub. April 1, 1865), 584 ("Volcan de Cartago," i. e. Volcán de Irazú, Costa Rica; coll. Salvin and Godman); Cat. Birds Brit. Mus., xvi, 1892, 307 (Irazú district, etc., Costa Rica).—SALVADORI, Atti R. Acc. Torino, 1868, 183 (Costa Rica).—FRANTZIUS, Journ. für Orn., 1869, 316 (Costa Rica).—BOUCARD, Proc. Zool. Soc. Lond., 1878, 69 (Naranjo de Cartago, Navarro, and Rancho Redondo, Costa Rica; crit.).—ELLIOT, Classif. and Synop. Troch., 1879, 33, part (Volcán de Irazú).—RIDGWAY, Proc. U. S. Nat. Mus., iii, 1880, 310 (Costa Rica).—ZELEDÓN, Cat. Aves de Costa Rica, 1882, 20; Anal. Mus. Nac. Costa Rica, i, 1887, 418 (Costa Rica).—NUTTING, Proc. U. S. Nat. Mus., v, 1882, 500 (San José, Costa Rica).—SHARPE, Gould's Mon. Troch. Suppl., 1885, pl. 6.—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 333, part, pl. 54, figs. 1, 2 (Volcán de Irazú, Rancho Redondo, San José, Dota, "La Palma"—San José, Peorsnada, Las Cruces de Candelária, and Naranjo de Cartago, Costa Rica).—FERRY, Pub. 146, Field Mus. N. H., orn. ser., i, no. 6, 1910, 264 (Coliblanco, Costa Rica).

(?) *Oreopyra calolæma* SALVIN, Proc. Zool. Soc. Lond., 1867, 153 (Cordillera de Tolé, Panamá; crit.); 1870, 205, part (Calovévora and Cordillera del Chucu, Panamá); Cat. Birds Brit. Mus., xvi, 1892, 307, part (Cordillera del Chucu and Calovévora).—MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., iv, livr. 3, 1878, 164, part (Cordillera de Tolé and Cordillera del Chucu, Panamá).—BOUCARD, The Hum. Bird, ii, 1892, 77 (Verágua); Gen. Hum. Birds,

<sup>a</sup> Fourteen specimens.

<sup>b</sup> Eleven specimens.

| Locality.                                                             | Wing. | Tail. | Ex-<br>posed<br>culmen. |
|-----------------------------------------------------------------------|-------|-------|-------------------------|
| MALES.                                                                |       |       |                         |
| Ten adult males from Costa Rica .....                                 | 63.7  | 36    | 19.5                    |
| Four adult males from western Panamá (Cordillera de Tolé, etc.) ..... | 61.7  | 34.5  | 19.4                    |
| FEMALES.                                                              |       |       |                         |
| Ten adult females from Costa Rica .....                               | 57.2  | 32.5  | 21                      |
| One adult female from western Panamá (Cordillera de Tolé) .....       | 55    | 33    | 20.5                    |

- 1895, 223 (Veragua).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 333, part (Cordillera de Tolé, Cordillera del Chucu, Calovévora, and Calobre, Panamá).
- [*Oreopyra*] *calolæma* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 80, part.
- [*Oreopyra*] *calolaema* MULSANT, Ann. Soc. Linn. Lyon, xxii, 1876, 203.
- (?) [*Oreopyra*] *calolæma* SALVIN, Proc. Zool. Soc. Lond., 1870, 206, part (Cordillera de Tolé, Cordillera del Chucu, and Calovévora, Panamá; crit.).
- O[reopyra]* *calolæma* SALVIN, Proc. Zool. Soc. Lond., 1870, 206, part (Volcán de Irazú and La Candelária, Costa Rica; crit.).
- Oreopyra salolæma* LAWRENCE, Ann. Lyc. N. Y., ix, 1868, 125 (Rancho Redondo and Las Cruces de Candelária, Costa Rica).
- [*Trochilus*] *calolæmus* GRAY, Hand-list, i, 1869, 138, no. 1767.
- O[reopyra]* *castaneiventris calolæma* BANGS, Proc. Biol. Soc. Wash., xix, July 30, 1906, 107 (crit.).
- Oreopyra castaneiventris calolæma* CARRIKER, Ann. Carnegie Mus., vi, 1910, 541 (centr. and n. Costa Rica; crit.).
- O[reopyra]* *calolaema (typica)* HARTERT, Das Tierreich, Troch., 1900, 117 (monogr.).
- Oreopyra venusta* LAWRENCE, Ann. Lyc. Nat. Hist. N. Y., viii, 1867, 484 (Costa Rica; coll.).
- Anthocephala castaneiventris* (not *Trochilus castaneiventris* Gould) LAWRENCE, Ann. Lyc. N. Y., ix, 1868, 124 (La Candelária, San José, and Irazú, Costa Rica; crit.).—FRANTZIUS, Journ. für Orn., 1869, 316 (Costa Rica).
- (?) *Oreopyra castaneiventris* SALVIN, Proc. Zool. Soc. Lond., 1867, 153, part (Cordillera de Tolé, Panamá).
- Oreopyra castaneiventris* SALVIN, Ibis, 1869, 316 (Costa Rica; crit.).
- Panterpe insignis*, supposed female (not of Cabanis and Heine) LAWRENCE, Ann. Lyc. N. Y., viii, 1867, 48 (Costa Rica).
- (?) *Oreopyra pectoralis* SALVIN, Ann. and Mag. N. H., vii, 1891, 377 (Costa Rica; coll. Salvin and Godman); Cat. Birds Brit. Mus., xvi, 1892, 308, 664.—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 334.—BOUCARD, Gen. Hum. Birds, 1895, 223 (Navarro, Rancho Redondo, and Volcán de Irazú, Costa Rica).
- (?) [*Oreopyra*] *pectoralis* SHARPE, Hand-list, iii, 1900, 123.
- (?) [*Oreopyra*] *pectoralis* BANGS, Proc. New Engl. Zool. Club, xix, 1906, 107 (crit.).
- [*Oreopyra*] *cal[olaema]* *pectoralis* SIMON, Cat. Troch., 1897, 25.
- (?) [*Oreopyra*] *calolaema pectoralis* HARTERT, Das Tierreich, Troch., 1900, 117 (monogr.).

#### OREOPYRA CINEREICAUDA Lawrence.

##### GRAY-TAILED MOUNTAIN GEM.

Precisely like the white-throated phase of *O. castaneiventris castaneiventris* except in color of tail, which in the adult male is ash gray (usually darker terminally) instead of blue-black, the shafts of rectrices whitish instead of dusky or dark grayish, the female with the dusky subterminal portion of the lateral rectrices much less well-defined, grading gradually into the dull grayish bronzy of the basal portion.

*Adult male*.—Length (skins), 99–107 (103); wing, 62–65 (64); tail, 36–39.5 (37.6); culmen, 19.5–21.5 (20.4).<sup>a</sup>

*Adult female*.—Length (skins), 94–98 (96); wing, 52.5–59.5 (56.7); tail, 32–35 (33.4); culmen, 21–23 (21.9).<sup>a</sup>

<sup>a</sup> Ten specimens.

Highlands of southern and central Costa Rica (Cartago; La Estrella de Cartago; Escazú; Dota Mountains; Santa Maria, Copéy, Laguária, Los Reyes, and Las Vueltas, Dota; Ojuras de Térraba) and adjacent portion of western Panamá (Voleán de Chiriquí).

*Oreopyra cinereicauda* LAWRENCE, Ann. Lyc. Nat. Hist. N. Y., viii, May, 1867, 485 (Costa Rica; coll. G. N. Lawrence); ix, 1868, 125 (Costa Rica).—FRANTZIUS, Journ. für Orn., 1869, 316 (Costa Rica).—SALVIN, Proc. Zool. Soc. Lond., 1870, 206; Cat. Birds Brit. Mus., xvi, 1892, 307.—BOUCARD, Proc. Zool. Soc. Lond., 1878, 68 (Navarro, Costa Rica); Gen. Hum. Birds, 1895, 225 (Navarro and Cartago, Costa Rica).—MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., iv, livr. 3, 1878, 163, pl. 116 (Cartago); Suppl., pl. 2.—ELLIOT, Classif. and Synop. Troch., 1879, 34.—ZELEDÓN, Cat. Aves de Costa Rica, 1882, 20; Anal. Mus. Nac. Costa Rica, i, 1887, 121.—SHARPE, Suppl. Gould's Mon. Troch., 1885, pl. 7.—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 333.—CARRIKER, Ann. Carnegie Mus., vi, 1910, 540 (s. w. Costa Rica; crit.; habits).

*O[reopyra] cinereicauda* SALVIN, Proc. Zool. Soc. Lond., 1870, 206 (Costa Rica; crit.).—BANGS, Proc. Biol. Soc. Wash., xix, 1906, 107 (Dota Mts.; crit. on pp. 105, 106).

*[Oreopyra] cinereicauda* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 80.—MULSANT, Ann. Soc. Linn. Lyon, xxii, 1876, 203.—SHARPE, Hand-list, ii, 1900, 123.

*O[reopyra] leucaspis cinereicauda* HARTERT, Das Tierreich, Troch., 1900, 117.

*[Trochilus] cinereicaudus* GRAY, Hand-list, i, 1869, 138, no. 1770.

*Anthocephala castaneiventris* (not *Trochilus castaneiventris* Gould) LAWRENCE, Ann. Lyc. N. Y., ix, 1868, 124, part.

### OREOPYRA HEMILEUCA Salvin.

#### WHITE-BELLIED MOUNTAIN GEM.

*Adult male*.—Forehead and crown, together with auricular, suborbital, and malar regions, brilliant metallic emerald green; occiput and nape duller, more bronzy green, changing to opaque black in position *a*, at least laterally; back, scapulars, wing-coverts, and rump metallic bronze-green (more bronzy posteriorly), the upper tail-coverts metallic bronze or greenish bronze; tail rather dull metallic bronze or greenish bronze, becoming still duller (more grayish) on lateral rectrices, the rectrices (except middle pair) tipped with pale buffy grayish and crossed by an indistinct subterminal band of darker bronzy or dusky; remiges purplish dusky, the inner secondaries glossed with bronze-greenish; edge of wing (metacarpal portion) pale cinnamon; a postocular streak of white extending obliquely backward and downward between the blackish of latero-occipital region and emerald green of auricular region; chin metallic emerald green, the feathers light gray basally and margined with pale gray or grayish white; throat soft metallic light violet-purple or mauve; rest of under parts white, spotted laterally, especially on sides of breast, with metallic bronze-green, the under tail-coverts pale brownish gray centrally; bill dull black; iris dark brown; feet grayish brown (in dried



skins); length (skins), 99–109 (105); wing, 62–64.5 (63.3); tail, 36–39 (37.5); culmen, 16.5–19.5 (18.8).<sup>a</sup>

*Adult female*.—Similar to the adult male, but chin and throat white spotted laterally with metallic green, rectrices (except middle pair) crossed by a distinct subterminal band of dusky, and metallic emerald green of forehead, etc., less brilliant; length (skins), 92–105 (98); wing, 55–60 (57.9); tail, 32.5–36 (34); culmen, 18.5–21 (19.6).<sup>a</sup>

*Young male*.—Essentially like the adult male, but without the purple throat-patch, the sides of throat being brownish dusky, the chin and upper median portion of throat much as in adult male; white of under parts duller, and upper parts more bronzy, with feathers of lower back and rump indistinctly margined with rusty.

Highlands of Costa Rica (Turrialba; Tucurríqui; Juan Viñas; Carrillo; La Hondura; Navarro; Rancho Redondo; Naranjo de Cartago; Cariblanco de Sarapiquí; Las Cruces de Candelária) and western Panamá (Chiriquí).<sup>b</sup>

*Oreopyra hemileuca* SALVIN, Proc. Zool. Soc. Lond., 1864 (pub. April 1, 1865), 584 (Turrialba and Tucurríqui, Costa Rica; coll. Salvin and Godman).—LAWRENCE, Ann. Lyc. N. Y., ix, 1868, 125 (Turrialba; Tucurríqui).—FRANTZIUS, Journ. für Orn., 1869, 316 (Las Cruces de Candelária and Rancho Redondo, Costa Rica).—BOUCARD, Proc. Zool. Soc. Lond., 1878, 69 (Naranjo de Cartago, Costa Rica); Gen. Hum. Birds, 1895, 222 (Navarro and Turrialba, Costa Rica).—MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., iv, livr. 3, 1878, 167 (Turrialba; Tucurríqui); Suppl., pl. 15.

[*Oreopyra*] *hemileuca* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 80.—MULSANT, Ann. Soc. Linn. Lyon, xxii, 1876, 203.

*Cæligena hemileuca* ELLIOT, Classif. and Synop. Troch., 1879, 31.—RIDGWAY, Proc. U. S. Nat. Mus., iii, 1880, 310.

*Cæligena hemileuca* ZELEDÓN, Cat. Aves de Costa Rica, 1882, 20.

*Cæligena hemileuca* SHARPE, Suppl. Gould's Mon. Troch., 1885, pl. 5.—ZELEDÓN, Anal. Mus. Nac. Costa Rica, i, 1887, 121 (Naranjo de Cartago).—HARTERT, Journ. für Orn., 1900, 366 (Chiriquí, Panamá; crit.).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 540 (Caribbean slope, Costa Rica, 2,000–4,000 ft.; habits).

*C[æligena] hemileuca* RIDGWAY, Rep. U. S. Nat. Mus. for 1890 (1891), 324 (diagnosis, etc.).

[*Cæligena*] *hemileuca* SHARPE, Hand-list, ii, 1900, 122.

[*Coeligena*] *hemileuca* SIMON, Cat. Troch., 1897, 25.

[*Coeligena*] *hemileuca* HARTERT, Das Tierreich, Troch., 1900, 115.

[*Trochilus*] *hemileucus* GRAY, Hand-list, i, 1869, 138, no. 1766.

*Delatiria hemileuca* SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 311.—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 337, pl. 54, figs. 3, 4.

### OREOPYRA SYBILLÆ (Salvin and Godman).

#### SYBIL'S MOUNTAIN GEM.

*Adult male*.—Above deep metallic grass green, becoming slightly more bronzy on rump; upper tail-coverts black; four middle rectrices grayish black, the other rectrices pale gray or grayish white margined

<sup>a</sup> Ten specimens.

<sup>b</sup> According to Hartert, Journ. für Orn., 1900, 366.

(on both webs) with dusky; remiges dusky, faintly glossed with violet; a conspicuous postocular streak of white passing obliquely backward and downward along upper margin of auricular region; auricular region and sides of neck deep green, like upper parts; under parts mostly metallic grass-green, but this much broken by white or grayish white margins to the feathers and by a white sub-terminal bar to feathers of throat; femoral and lumbar tufts, anal region, and extreme lower abdomen (medially) white; under tail-coverts white with a central area of gray; bill black; iris dark brown; feet brownish (in dried skins); length (skins), 104–113 (108); wing, 62.5–67.5 (65.2); tail, 38.5–42 (39.8); culmen, 20–22 (21.1).<sup>a</sup>

*Adult female*.—Above as in adult male, but outermost rectrix white or grayish white (without gray margin), the inner web with a sub-terminal bar (more or less distinct) of dusky gray, the second rectrix with a similar bar across both webs; chin and throat buff, or white tinged with buff; rest of under parts mainly grayish white, the sides of breast mostly metallic green; length (skins), 99–102 (101); wing, 56.5–60 (58.4); tail, 34–37.5 (35.7); culmen, 22.<sup>b</sup>

Highlands of northern Nicaragua (Matagalpa; San Rafaél del Norte; Ocotal).

*Delattria sybillæ* SALVIN and GODMAN, Ibis, April, 1892, 327 (Matagalpa, Nicaragua; coll. Salvin and Godman); Biol. Centr.-Am., Aves, ii, 1892, 337, pl. 54A, figs. 3, 4 (Matagalpa and San Rafaél del Norte, Nicaragua).—SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 664.

*Delattria sybille* BOUCARD, Gen. Hum. Birds, 1895, 220 (Matagalpa).

[*Coeligena*] *sybillæ* SIMON, Cat. Troch., 1897, 25.

[*Coeligena*] *sybillæ* HARTERT, Das Tierreich, Troch., 1900, 115 (monogr.).

[*Cæligena*] *sybillæ* SHARPE, Hand-list, ii, 1900, 123.

### OREOPYRA VIRIDIPALLENS (Bourcier and Mulsant).

#### GREEN-THROATED MOUNTAIN GEM.

*Adult male*.—Forehead and crown metallic grass green, changing to brilliant, more emerald, green in position *a*, the occiput and hind-neck more bronzy green; back, scapulars, and wing-coverts bronze-green or greenish bronze, passing into bronze or coppery bronze on rump; upper tail-coverts dull blackish, faintly glossed with bluish or bronzy purplish; four middle rectrices dusky slate or slate-blackish, faintly glossed with bluish, the rest of tail similar but paler and grayer (especially the outermost pair), indistinctly darker terminally and along edge; remiges purplish dusky; a conspicuous postocular streak of white, extending obliquely backward and downward, and below this an auricular area of dusky metallic bronze-green (more brilliant in position *a*), continued beneath eye to loreal region; malar region, chin, throat, chest, median portion of breast, and abdomen

<sup>a</sup> Eight specimens.

<sup>b</sup> Five specimens.

dull white or grayish white, the feathers of chin and throat with a subterminal roundish or subcrenate spot of brilliant emerald green, the base and margin of each feather being whitish; sides of breast metallic bronze-green, the flanks brownish gray glossed with bronze-green; under tail-coverts brownish gray margined with dull whitish; bill dull black; iris dark brown; feet grayish brown (in dried skins); length (skins), 100–109 (104); wing, 63–67 (65.1); tail, 39–43 (41); culmen, 19–21 (19.9).<sup>a</sup>

*Adult female*.—Similar to the adult male, but chin and throat immaculate dull white or grayish white, lateral rectrices with a broad terminal, ill-defined area of pale brownish gray, middle rectrices more bronzy, and upper tail-coverts bronze-green instead of blackish; length (skins), 94–107 (98); wing, 57–61 (58.9); tail, 34–38.5 (36.3); culmen, 18.5–21 (20.4).<sup>b</sup>

Highlands of Guatemala (Guatemala City; Cobán; Tolimán; Chilasco, Volcán de Fuego; Santa Maria, Quezatelango; Pié de la Cuesta, San Marcos), and southern Mexico, in State of Chiapas (Tumbalá).

*T[rochilus] viridi-pallens* BOURCIER and Mulsant, Ann. Sci. Phys. et Nat. Lyon, ix, 1846, 321 (Cobán, Vera Paz, Guatemala).

*P[olytmus] viridipallens* GRAY, Gen. Birds, i, Dec., 1848, 108.

*[Delat[ri]a] viridi-pallens* BONAPARTE, Consp. Av., i, 1850, 70.

*Delat[ri]a viridipallens* GOULD, Mon. Troch., ii, pt. ix, May, 1855, pl. 63; (vol. ii, 1861, pl. 63); Introd. Troch., oct. ed., 1861, 60.—SCLATER and SALVIN, Ibis, 1859, 129 (Guatemala).—SALVIN, Ibis, 1859, 468 (above the plains of Dueñas, Guatemala); 1860, 40, 195, 263 (Volcán de Fuego, Guatemala; habits); Cat. Birds Brit. Mus., xvi, 1892, 310, 664 (Sta Maria, near Quezaltenango; Pié de la Cuesta, San Marcos; Volcán de Fuego, Chilasco, and Cobán, Guatemala).—SCLATER, Cat. Am. Birds, 1862, 289 (Cobán, Guatemala).—BOUCARD, Liste Ois. récol. Guat., 1878, 45; Gen. Hum. Birds, 1895, 219.—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 336.

*Delat[ri]a viridi-pallens* SALVIN and SCLATER, Ibis, 1860, 40 (Volcán de Fuego).

*[Delat[ri]a] viridipallens* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 80.

*[Agy[tr]ia] viridipallens* REICHENBACH, Aufz. der Colib., 1854, 10; Troch. Enum., 1855, 7, pl. 758, figs. 4746–7.

*[Thaumat[is]] viridipallens* BONAPARTE, Rev. et Mag. de Zool., 1854, 255.

*C[hariessa] viridipallens* HEINE, Journ. für Orn., 1863, 178.

*Lampornis viridipallens* Mulsant and Verreaux, Classif. Troch., 1866, 24.

*Coeligena viridipallens* Mulsant and Verreaux, Hist. Nat. Ois.-Mouch., i, livr. 3, 1874, 185 (Cobán, Guatemala); iv, livr. 2, 1877, 159.

*[Coeligena] viridipallens* Mulsant, Ann. Soc. Linn. Lyon, n. s., xxii, 1876, 203.—SIMON, Cat. Troch., 1897, 25.

*[Coeligena] viridipallens* HARTERT, Das Tierreich, Troch., 1900, 115 (monogr.).

*[Coeligena] viridipallens* RIDGWAY, Man. N. Am. Birds, 1887, 310; Rep. U. S. Nat. Mus. for 1890 (1891), 324 (diag., etc.).

*[Coeligena] viridipallens* SHARPE, Hand-list, ii, 1900, 123.

*Coeligena viridipallens* ELLIOT, Classif. and Synop. Troch., 1879, 31.—RIDGWAY, Proc. U. S. Nat. Mus., iii, 1880, 310 (Cobán; Guatemala City; "Mexico").

*[Topaza] viridipallens* GRAY, Hand-list, i, 1869, 134, no. 1727.

<sup>a</sup> Eleven specimens.

<sup>b</sup> Nine specimens.



Genus *PANTERPE* Cabanis and Heine.

*Panterpe* CABANIS and HEINE, Mus. Hein., iii, March, 1860, 43, footnote. (Type, *P. insignis* Cabanis and Heine.)

Rather large Trochilidae (length about 105–110 mm.) with the slender, compressed bill slightly longer than head, nasal operculum inconspicuous or mostly covered by frontal feathering, feet rather stout with tarsus mostly naked, tail about two-thirds as long as wing, emarginate or double-rounded, with broad and rather soft rectrices, and very brilliant coloration, the pileum brilliant blue or violet, throat brilliant golden, orange, or scarlet, a blue or violet pectoral patch, upper tail-coverts blue, the tail uniform blue-black or violet-black.

Bill slightly longer than head, straight, very slender, compressed; culmen rounded but basally contracted into a well-defined ridge; tomia smooth; mandible with a distinct lateral median groove or sulcus, the maxilla with indication of a similar groove. Nasal operculum inconspicuous, being mostly covered by the overhanging frontal feathers, which anteriorly form a truncated or slightly emarginate antia. Tarsus rather stout, its upper half clothed with short feathers; anterior toes about equal in length, the hallux slightly shorter, all the toes rather stout, with well-developed and very acute claws. Wing three times (more or less) as long as exposed culmen, the outermost primary longest. Tail about two-thirds as long as wing, emarginate or slightly double-rounded, the rectrices very broad, rather soft.

*Coloration*.—Pileum brilliant metallic blue, violet-blue or violet bordered posteriorly by velvety black; back, etc., metallic green, passing into blue on upper tail-coverts; tail uniform blue-black or violet-black; under parts mostly brilliant metallic green but this relieved by a violet jugular area and brilliant golden orange or scarlet on throat. Sexes alike.

*Range*.—High mountains of Costa Rica and western Panamá. (Monotypic.)

*PANTERPE INSIGNIS* Cabanis and Heine.

## IRAZÚ HUMMING BIRD.

*Adults (sexes alike)*.<sup>a</sup>—Forehead and crown bright metallic blue (varying from greenish to a slightly purplish hue), the feathers dusky gray basally with a bar of velvety black (concealed) between the gray basal portion and the metallic blue tip; loreal and supra-auricular regions, occiput, and nape velvety black (*a*) changing to bronze or dull coppery bronze in position *c*; back, scapulars, and wing-coverts

<sup>a</sup> After careful examination of a very large series of specimens I can not find that there is even an *average* difference of coloration between the sexes, some of the most brightly colored specimens being females, while some of the duller are males.

metallic, more or less bronzy, green, the rump similar but purer or more bluish green, the upper tail-coverts metallic bluish green; remiges dusky, faintly glossed with purplish; tail entirely blue-black (slightly metallic); chin and throat (more or less extensively) brilliant metallic orange-red or scarlet centrally, passing into a more orange or golden hue exteriorly, this passing gradually into the golden or bronzy green color of sides of neck and chest; a spot of metallic violet, passing into blue exteriorly (or of the two colors intermixed) on center of chest; rest of under parts less golden or more bluish metallic green, the anal tufts grayish white; bill black, the basal half (more or less) of mandible flesh color (in life); iris dark brown; legs and feet dusky brown.

*Adult male*.—Length (skins), 102–119 (106.2); wing, 62–69 (66.6); tail, 39–48 (43.7); culmen, 18–22 (20.2).<sup>a</sup>

*Adult female*.—Length (skins), 100–113 (105); wing, 58–65 (61.1); tail, 37–43 (40.3); culmen, 19.5–23 (20.7).<sup>b</sup>

*Young*.—Essentially like adults in coloration but the colors duller (crown more greenish, throat more coppery) and texture of plumage different (more blended or fluffy).

Highlands of Costa Rica (Volcán de Irazú; Volcán de Turrialba; Volcán de Barba; Volcán de Poás; Cerro de la Candelária; La Palma de San José; Rancho Redondo; Escazú; Ojuras de Térraba; Coliblanco; Las Vueltas, Santa María de Dota) and western Panamá (Boquete; Volcán de Chiriquí; Verágua).

*Panterpe insignis* CABANIS and HEINE, Mus. Hein., iii, March, 1860, 43 ("San José," i. e. Volcán de Irazú?, Costa Rica; coll. Berlin Mus.).—GOULD, Mon. Troch., v, pt. xxi, 1861, pl. 336; Introd. Troch., oct. ed., 1861, 167.—CABANIS, Journ. für Orn., 1862, 164 ("San Jose").—LAWRENCE, Ann. Lyc. N. Y., ix, 1868, 124 (La Candelária and "Volcan Yrazei"=Irazú, Costa Rica).—FRANTZIUS, Journ. für Orn., 1869, 316 (La Candelária).—MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., ii, livr. 1, 1875, 25 (Costa Rica; Volcán

<sup>a</sup> Twenty-nine specimens.

<sup>b</sup> Eighteen specimens.

| Locality.                                                  | Wing. | Tail. | Ex-<br>posed<br>culmen. |
|------------------------------------------------------------|-------|-------|-------------------------|
| MALES.                                                     |       |       |                         |
| Ten adult males from Volcán de Turrialba.....              | 67.1  | 44.9  | 21                      |
| Ten adult males from Volcán de Irazú.....                  | 66.1  | 43.2  | 20.4                    |
| One adult male from Volcán de Barba.....                   | 66    | 42.5  | 20                      |
| One adult male from Volcán de Poás.....                    | 67    | 44.5  | 19.5                    |
| Six adult males from Las Vueltas, Santa María de Dota..... | 66.4  | 43.8  | 18.7                    |
| One adult male from Verágua.....                           | 64    | 39.5  | 19.5                    |
| FEMALES.                                                   |       |       |                         |
| Ten adult females from Volcán de Turrialba.....            | 61    | 40.4  | 20.6                    |
| Six adult females from Volcán de Irazú.....                | 61.2  | 40.3  | 21.2                    |
| One adult female from Las Vueltas.....                     | 61.5  | 39    | 20                      |
| One adult female from Boquete, Panamá.....                 | 60    | 39.5  | 19                      |

- de Chiriquí, Panamá); iv, livr. 3, 1878, 188; Suppl., pl. 31.—BOUCARD, Proc. Zool. Soc. Lond., 1878, 71 (Volcán de Irazú; habits); The Hum. Bird, ii, 1892, 77 (Volcán de Chiriquí); Gen. Hum. Bird, 1895, 235.—ELLIOT, Classif. and Synop. Troch., 1879, 195.—ZELEDÓN, Cat. Aves de Costa Rica, 1882, 21; Anal. Mus. Nac. Costa Rica, i, 1887, 122 (Faldas de Irazú).—SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 159.—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 283 (La Candelária, Volcán de Irazú, Faldas de Irazú, and La Palma de San José, Costa Rica; Volcán de Chiriquí).—SALVADORI and FESTA, Boll. Mus. Zool., etc., Torino, xiv, 1899, no. 339, 7 (Chiriquí, Panamá).—BANGS, Bull. New Engl. Zool. Club, iii, 1902, 29 (Boquete and Volcán de Chiriquí, 6,000–7,600 ft.); iv, 1908, 25 (descr. of melanistic or abnormally colored specimen).—RIDGWAY, Condor, vii, 1905, 158, in text (Volcán de Turrialba, Costa Rica, 9,000 ft.).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 532 (highlands of Costa Rica).—FERRY, Pub. 146, Field Mus. N. H., orn. ser., i, no. 6, 1910, 263 (Volcán de Turrialba, Costa Rica; habits). [*Panterpe*] *insignis* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 93.—MULSANT, Ann. Soc. Linn. Lyon, xxii, 1876, 208.—SHARPE, Hand-list, ii, 1900, 114. *P[anterpe] insignis* HARTERT, Das Tierreich, Troch., 1900, 82 (monogr.). [*Trochilus*] *insignis* GRAY, Hand-list, i, 1869, 138, no. 1768. *Clytolæma insignis* MULSANT and VERREAUX, Classif. Troch., 1866, 59.

#### Genus KLAIS Reichenbach.

- [*Basilinna*.] *β. Klais* REICHENBACH, Aufz. der Colib., 1854, 13. (Type, *Trochilus guimeti* Bourcier and Mulsant.)  
*Klais* (emendation) SCLATER, Cat. Am. Birds, 1862, 304.  
*Guimettia* "Reich[enbach]" BONAPARTE, Ann. Sci. Nat., sér. 4, i, 1854, 137. (Type, *Trochilus guimeti* Bourcier and Mulsant.)

Small Trochilidæ (length about 75 mm.) with bill shorter than head, straight, nasal operculi mostly exposed, tarsi feathered (except behind), tail a little more than half to nearly three-fifths as long as wing, truncate or slightly emarginate in adult male, double-rounded in female, the rectrices broadly rounded terminally (in both sexes), the coloration mostly grayish beneath; adult male with pileum, chin, and throat metallic violet-blue and tail greenish passing into black terminally; adult female paler gray beneath (including chin and throat), pileum greenish blue, the lateral rectrices tipped with pale gray.

Bill shorter than head, straight, slender, terete; culmen rounded except basally, where contracted into a distinct ridge; tomia smooth; mandible with the usual lateral median groove. Nasal operculum rather narrow, only the upper posterior portion concealed by frontal feathering, the latter extending scarcely as far forward as anterior end of nostril, forming a short point or antia on each side of culmen. Tarsus feathered, except on posterior side; anterior toes about equal in length, or the lateral ones just appreciably shorter than the middle one. Wing nearly to quite four times as long as exposed culmen, the outermost primary longest, normal in shape. Tail of adult male about three-fifths as long as wing, truncate or faintly emarginate, that of female a little more than half as long as wing, rounded, with middle rectrices shorter than next pair, the rectrices broadly rounded at tip in both sexes.



*Coloration*.—Back, etc., metallic bronze-green, the middle rectrices and basal portion of other rectrices less bronzy or more bluish green, the outer rectrices blackish terminally or subterminally; under parts partly or wholly grayish; a white postocular spot. Adult male with head mostly metallic violet or violet-blue, under parts of body glossed with metallic greenish, and without grayish tips to lateral rectrices; adult female with pileum greenish blue, whole under parts pale gray, and outer rectrices tipped with pale gray.

*Range*.—Nicaragua to Venezuela and Ecuador. (Monotypic.)

**KLAIS GUIMETI** (Bourcier and Mulsant).

**GUIMET'S HUMMING BIRD.**

*Adult male*.—Pileum bright metallic violet or violet-blue, becoming more decidedly blue (sometimes even greenish) posteriorly; rest of upper parts metallic bronze-green or greenish bronze, the upper tail-coverts purer green or bluish green; middle rectrices metallic silvery bronze-green or bluish green, the remaining rectrices similar basally, but with terminal half (approximately) dull black or dusky, narrowly tipped with light brownish gray; remiges purplish dusky; a postocular spot of white; chin, throat, and malar region rich metallic violet or violet-blue; rest of under parts brownish gray, spotted or flecked (except on abdomen) with metallic green or bronze-green, the under tail-coverts brownish gray margined with dull white or pale gray; bill dull black; iris dark brown; feet grayish brown (in dried skins); length (skins), 70–82 (75); wing, 45–52.5 (49.5); tail, 25.5–31 (28.4); culmen, 12–13.5 (12.8).<sup>a</sup>

*Adult female*.—Above similar to adult male, but with metallic blue of pileum lighter, decidedly blue (not violaceous) or even greenish in hue, lateral rectrices more abruptly tipped with pale gray, and middle rectrices sometimes blackish terminally; under parts pale gray, the sides and flanks glossed or spotted with metallic green or bronze-green; length (skins), 73–79 (76); wing, 44–48.5 (45.9); tail, 23–27 (25.1); culmen, 11.5–14 (13).<sup>b</sup>

*Young*.—Similar to the adult female, but pileum dull metallic green instead of bright blue or bluish green.

<sup>a</sup> Twenty-six specimens.

<sup>b</sup> Seventeen specimens.

| Locality.                                            | Wing. | Tail. | Ex-<br>posed<br>culmen. |
|------------------------------------------------------|-------|-------|-------------------------|
| MALES.                                               |       |       |                         |
| Ten adult males from Costa Rica.....                 | 48.6  | 28.2  | 12.9                    |
| Five adult males from Panamá.....                    | 49    | 27.9  | 12.9                    |
| Nine adult males from central Colombia.....          | 50.6  | 28.8  | 12.7                    |
| One adult male from eastern Ecuador (Napo).....      | 52    | 29    | 13                      |
| One adult male from northern Peru (Chanchamayo)..... | 48.5  | 27.5  | 12                      |
| FEMALES.                                             |       |       |                         |
| Eleven adult females from Costa Rica.....            | 45.5  | 25    | 13                      |
| Five adult females from central Colombia.....        | 46.7  | 25.4  | 12.9                    |
| One adult female from eastern Ecuador (Napo).....    | 45    | 24    | 14.5                    |

Nicaragua (Chontales), Costa Rica (Navarro de Cartago; Carrillo; Bonilla; Escazú; San Pedro; Guápiles; Miravalles; Terraba; El General; Boruca; Buenos Aires), Panamá (Santa Fé and Santiago, Verágua; Bugaba; Volcán de Chiriquí; Calovévora; Chitra; Castillo; Laguna de Castillo; Chepo; Ventorillo, Cocló), and southward through Colombia (Bogotá; Llanos de Meta) and Ecuador (Napo; Báeza; Gualaquiza; Zamora) to Peru (Chanchamoyo; Chyavetas; Huambo) and Venezuela (Caracas; San Esteban).

[*Trochilus*] *guimeti* BOURCIER and Mulsant, Ann. Sci. Phys. et Nat. Lyon, vi, livr. 1, 1843, 38, pl. 2 (no locality given).

*Trochilus guimeti* BOURCIER, Rev. Zool., 1843, 72 (Colombia; Caracas, Venezuela).

*Hylocharis* *guimeti* GRAY, Gen. Birds, i, Dec., 1848, 114.

[*Hylocharis*] *guimeti* GRAY, Hand-list, i, 1869, 152, no. 1959.

[*Basilinna*] *β. Klais guimeti* REICHENBACH, Aufz. der Colibr., 1854, 13.

[*Basilinna*] *guimeti* REICHENBACH, Troch. Enum., 1855, 11.

*B[asilinna] guimeti* CABANIS and HEINE, Mus. Hein., iii, 1860, 45 (Verágua; Caracas).

[*Myiabeillia*] *guimeti* BONAPARTE, Rev. et Mag. de Zool., 1854, 253.

*myiabeillia guimeti* SCLATER, Proc. Zool. Soc. Lond., 1857, 7 (Bogotá, Colombia).

*Klais guimeti* GOULD, Mon. Troch., pt. xiv, Sept., 1857; vol. iv, 1861, pl. 210; Introd. Troch., oct. ed., 1861, 119.—LAWRENCE, Ann. Lyc. N. Y., ix, 1868, 145 (Costa Rica).—MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., ii, livr. 1, 1875, pl. 19; iii, livr. 2, 1876, 139, pl. 82 (Venezuela; Colombia).—BOUCARD, Proc. Zool. Soc. Lond., 1878, 69 (Navarro de Cartago, Costa Rica); The Hum. Bird, ii, 1892, 74 (Bogotá); Gen. Hum. Birds, 1895, 49 (Colombia).—ELLIOT, Classif. and Synop. Troch., 1879, 184.—CHERRIE, Expl. Zool. Mérid. Costa Rica, 1882, 45 (Boruca and Terraba, s. w. Costa Rica).—ZELEDÓN, Cat. Aves de Costa Rica, 1882, 21; Anal. Mus. Nac. Costa Rica, i, 1887, 122 (Navarro de Cartago).—TACZANOWSKI, Orn. du Pérou, i, 1884, 364.—BERLEPSCH, Zeitschr. Orn., 1887, 186 (Bogotá); Journ. für Orn., 1887, 319 (Bogotá; synonymy).—SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 359, 666 (Chontales, Nicaragua; Costa Rica; Laguna de Castillo, Santiago, Santa Fé de Verágua, and Chepo, Panamá; Bogotá; Ecuador; upper Amazons; San Esteban, Venezuela).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 343.—SALVADORI and FESTA, Boll. Mus. Zool., etc., Torino, xv, 1900, 8 (Gualaquiza, e. Ecuador).—HARTERT (E. and C.), Novit. Zool., i, 1894, 17 (near Zamora, Ecuador).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 551 (Costa Rican range).

[*Klais*] *guimeti* MULSANT, Ann. Soc. Linn. Lyon, n. s., xxii, 1876, 221.

*Klais guimeti* SCLATER, Cat. Am. Birds, 1862, 304 (Bogotá).—SALVIN, Proc. Zool. Soc. Lond., 1867, 155 (Santiago and Santa Fé de Verágua, Panamá).—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1867, 752 (Chyavetas, e. Peru).—TACZANOWSKI, Proc. Zool. Soc. Lond., 1882, 37 (Huambo, Peru).—SIMON, Mém. Soc. Zool. France, ii, 1889, 224 (San Esteban, Venezuela).—BANGS, Auk, xxiv, 1907, 296 (Boruca, Costa Rica).

*C[klais] guimeti* HEINE, Journ. für Orn., 1863, 196.—HARTERT, Das Tierreich, Troch., 1900, 181.

[*Clais*] *guimeti* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 88.—HEINE and REICHENOW, Nom. Mus. Hein. Orn., 1890, 181 (Caracas).—SHARPE, Hand-list, ii, 1900, 143.

*Adelomya guimeti* MULSANT and VERREAUX, Classif. Troch., 1866, 70.

- Mellisuga merrettii* LAWRENCE, Ann. Lyc. Nat. Hist. N. Y., vii, April, 1860, 110 (District of El Minéral, 15 miles west of District of Belén, Verágua, Panamá; coll. Dr. J. K. Merritt; =adult female).—GOULD, Ibis, 1860, 309.
- Glaís merretti* SALVIN, Ibis, 1870, 209 (Castillo, Calovévora, Chitra, Laguna de Castillo, Bugaba, and Volcán de Chiriquí, Panamá; crit.).
- Klaís merritti* BOUCARD, The Hum. Bird, ii, 1892, 74 (Verágua); Gen. Hum. Birds, 1895, 50 ("Guatemala"; Costa Rica; Panamá).
- [*Klaís guimeti*] var. *merritti* MULSANT, Ann. Soc. Linn. Lyon, n. s., xxii, 1876, 221.
- Klaís guimeti merritti* BERLEPSCH and STOLZMANN, Proc. Zool. Soc. Lond., 1902, 29 (Borgoña, centr. Peru); Ornis, 1906, 120 (Huaynapata, Cuzco, centr. Peru).

### Genus ABEILLIA Bonaparte.

- Abeillia* BONAPARTE, Consp. Av., i, 1849, 79. (Type, *A. typica* BONAPARTE = *Ornismya abeillei* Delattre and Lesson.)
- [*Basilinna*.] *γ. Baucis* REICHENBACH, Aufz. der Colibr., 1854, 13. (Type, *Ornismya abeillei* Delattre and Lesson.)
- Myiabeillia* BONAPARTE, Rev. et Mag. de Zool., vi, May, 1854, 253. (Type, *Ornismya abeillei* Delattre and Lesson.)

Small Trochilidæ (length about 68–75 mm.) very closely related to *Klaís*, but with tail relatively longer (three-fifths to nearly two-thirds as long as wing), more distinctly emarginate or double-rounded in adult male, the latter with pileum metallic green (concolor with back, etc.) the chin and upper throat bright metallic emerald green.

Bill shorter than head, straight, terete; culmen rounded except basally, where contracted into a rather distinct ridge; tomia smooth; mandible with the usual lateral median groove. Nasal operculum moderately broad, strongly convex, only the inner portion hidden by the decumbent frontal feathering, which extends anteriorly nearly to anterior end of nostril, forming a single broad, rounded, frontal antia. Tarsus feathered, except on posterior side; anterior toes about equal in length, but the outer apparently appreciably shorter. Wing about four times as long as exposed culmen, the outermost primary longest, normal in shape. Tail of adult male nearly two-thirds as long as wing, deeply emarginate, with lateral rectrices slightly shorter than the next, that of adult female moderately rounded, with middle rectrices slightly shorter than the next, the rectrices (in both sexes) broadly rounded terminally.

*Coloration*.—Above metallic bronze-green, including middle rectrices and basal portion of other rectrices, which are blackish subterminally and grayish terminally; a small white postocular spot. Adult male with chin and upper throat bright metallic emerald green, the remaining under parts olive-grayish strongly glossed with bronze-green (more dusky on lower throat); adult female with under parts pale gray, the outer rectrices more abruptly tipped with gray.

*Range*.—Southern Mexico to Guatemala. (Monotypic.)



**ABEILLIA ABEILLEI** (Delattre and Lesson).**ABEILLÉ'S HUMMING BIRD.**

*Adult male*.—Above metallic bronze-green or greenish bronze, including middle pair of rectrices; rest of tail black, faintly glossed with bluish or bronzy, the rectrices tipped with brownish gray (most broadly on outermost), and with basal half (more or less) of outer web rather dull greenish bronze or bronze-green; remiges purplish dusky or dull dusky slate faintly glossed with purplish; a small postocular spot of white; chin and upper throat brilliant metallic emerald green or yellowish green; lower throat velvety black in position *a*, dusky metallic bronze-green in position *c*, passing into duller black or dusky on chest, the remaining under parts deep brownish gray more or less glossed or overlaid with metallic bronze-green, except on abdomen; under tail-coverts metallic bronze-green centrally, broadly margined with deep brownish gray; bill dull black; iris dark brown; feet brownish (in dried skins); length (skins), 73–86 (80); wing, 44–50.5 (47.8); tail, 27.5–33 (30.3); culmen, 10–11.5 (10.6).<sup>a</sup>

*Adult female*.—Similar to the adult male, but lateral rectrices distinctly tipped with pale brownish gray, and under parts pale gray, spotted or glossed with metallic green or bronze-green on sides; length (skins), 71–72 (71.3); wing, 41.5–46 (43.8); tail, 26.5–27 (26.8); culmen, 11–12 (11.5).<sup>b</sup>

Southeastern Mexico, in States of Vera Cruz (Jalapa; Córdoba; Orizaba) and Chiapas (Tumbalá); Guatemala (Cobán; Guatemala City; Volcán de Fuego; Pié de la Cuesta, San Marcos; Tolimán, Sololá); northern Nicaragua (Matagalpa).

*Ornismya abeillei* DELATTRE and LESSON, Rev. Zool., 1839, 16 (Jalapa, Vera Cruz, Mexico).

*M[ellisuga] abeillei* GRAY, Gen. Birds, i, Dec., 1848, 112.

[*Ramphomicron*] *abeillei* BONAPARTE, Consp. Av., i, 1850, 79.

[*Basilinna*] *γ. Baucis abeillei* REICHENBACH, Aufz. der Colibr., 1854, 13.

*Basilinna abeillei* REICHENBACH, Troch. Enum., 1855, 11.

*B[aucis] abeillei* CABANIS and HEINE, Mus. Hein., iii, 1860, 72 (Guatemala).

*Baucis abeillei* BOUCARD, Ann. Soc. Linn. Lyon, xxii, 1876, 23 (Córdoba, Vera Cruz); Notes Troch. du Mex., 1875, 10 (Córdoba; Guatemala).—MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., iii, livr. 2, 1876, 143; iv, livr. 3, 1878, 219.

<sup>a</sup> Sixteen specimens.

<sup>b</sup> Three specimens.

| Locality.                                               | Wing. | Tail. | Ex-<br>posed<br>culmen. |
|---------------------------------------------------------|-------|-------|-------------------------|
| MALES.                                                  |       |       |                         |
| Six adult males from Vera Cruz.....                     | 47.9  | 30.3  | 10.6                    |
| Ten adult males from Chiapas (3) and Guatemala (7)..... | 47.7  | 30.2  | 10.6                    |

- [*Baucis*] *abeillæi* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 88.  
 [*Baucis*] *abeillei* Mulsant, Ann. Soc. Linn. Lyon, n. s., xxii, 1876, 221.—HEINE and REICHENOW, Nom. Mus. Hein. Orn., 1890, 187 (Guatemala).  
*Daucis abeillei* BOUCARD, Liste Ois. réc. Guat., 1878, 46.  
*Adelomya abeillei* Mulsant and Verreaux, Classif. Troch., 1866, 71.  
 [*Trochilus*] *abeillei* GRAY, Hand-list, i, 1869, 142, no. 1840.  
*A[beille]a abeillei* HARTERT, Das Tierreich, Troch., 1900, 215 (monogr.).  
 [*Abeilleia*] *abeillei* SHARPE, Hand-list, ii, 1900, 143.  
*Abeillia typica*? BONAPARTE, Consp. Av., i, 1850, 79, in text under *Ramphomicron abeillei*.  
*Abeillia typica* ELLIOT, Classif. and Synop. Troch., 1879, 184.—ZELEDÓN, Cat. Aves de Costa Rica, 1882, 21; Anal. Mus. Nac. Costa Rica, i, 1887, 122.—SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 358, 666 (Mexico; Cobán, Volcán de Fuego, and Pié de la Cuesta, San Marcos, Guatemala).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 342 (Jalapa and Córdoba, Vera Cruz; Tolimán in Sololá, etc., Guatemala; Matagalpa, Nicaragua).—BOUCARD, Gen. Hum. Birds, 1895, 55 (Jalapa; Cobán).  
*Myiabeillia typica* GOULD, Mon. Troch., iv, pt. viii, Oct., 1854 (vol. iv, 1861), pl. 211; Introd. Troch., oct. ed., 1861, 119.—SCLATER, Proc. Zool. Soc. Lond., 1856, 287 (Mexico); Cat. Am. Birds, 1862, 304.—SCLATER and SALVIN, Ibis, 1859, 128 (Cobán).—SALVIN, Ibis, 1860, 195, 262, 263 (Cobán and Volcán de Fuego; habits).  
 [*Myiabeillia*] *typica* BONAPARTE, Rev. et Mag. Zool., 1854, 253.  
*Myiabiellia typica* D'OCA, La Naturaleza, iii, 1875, 205 (Jalapa); Troq. de Mex., 1875, pl. (10), fig. 35.  
*Myiabiellia typica* D'OCA, Troq. de Mex., 1875, 47.

#### Genus DAMOPHILA Reichenbach.

- [*Coeligena*.] *β. Damophila* REICHENBACH, Aufz. der Colib., March(?), 1854, 7.  
 (Type, *Ornismya juliz* Bourcier.)  
*Juliamya* BONAPARTE, Rev. et Mag. de Zool., vi, May, 1854, 255. (Type, *J. typica* Bonaparte=*Ornismya juliz* Bourcier.)

Rather small Trochilidæ (length about 78–90 mm.) with bill about as long as head, straight, and terete; nasal operculi feathered; tail about two-thirds as long as wing (in female) to three-fourths as long (adult males), graduated, blue-black in both sexes; adult males with under parts of body bright metallic violet-blue, the chin and throat brilliant metallic green, in abrupt contrast.

Bill as long as head, straight, terete; culmen broadly rounded but basally contracted into a narrow mesorhinal ridge; tomia smooth; mandible with a narrow median lateral groove and maxilla with a faint indication of a similar groove. Tarsus feathered; middle and inner toes about equal in length, the outer slightly shorter, the hallux slightly shorter than lateral toes; all the toes slender. Wing about three times as long as exposed culmen, the outermost primary longest. Tail about two-thirds as long as wing (in females) to three-fourths as long (in adult males), graduated, the rectrices rather narrow, the lateral ones contracted terminally but all with rounded tip.

*Coloration*.—Above metallic green (darker in adult males), the tail blue-black (middle rectrices sometimes dark greenish in females); adult males with chin and throat brilliant metallic green, the under parts of body, abruptly, bright violet-blue; tail wholly blue-black; adult females with under parts pale gray or grayish white (the throat sometimes spotted with green), the lateral rectrices tipped with gray.

*Range*.—Panamá to western Ecuador. (Three species or subspecies.)

KEY TO THE SPECIES AND SUBSPECIES OF DAMOPHILA.

- a. Chin, throat, and chest brilliant metallic green, under parts of body metallic violet-blue; tail uniform blue-black. (*Adult males*.)
  - b. Pileum brilliant metallic green. (*Damophila juliae*.)
    - c. Bill averaging shorter (14.5); pileum usually less glittering green and blue of under parts usually(?) less violaceous. (Colombia to Chiriquí.)
 

***Damophila juliae juliae*, adult male (p. 519).**
    - cc. Bill averaging longer (15.1); pileum usually more glittering green and blue of under parts usually(?) more violaceous. (Western Ecuador.)
 

***Damophila juliae felicianae*, adult male (extralimital).<sup>a</sup>**
  - bb. Pileum dull metallic green, like back. (Panamá and adjacent part of Costa Rica?).....***Damophila panamensis*, adult male (p. 521).**
- aa. Chin, throat, and chest pale gray or grayish white, or only spotted with green; under parts of body pale gray, passing into white posteriorly; lateral rectrices tipped with gray. (*Adult females*.)
  - b. Throat usually heavily spotted with green.
 

***Damophila juliae felicianae*, adult female (extralimital).<sup>b</sup>**
  - bb. Throat usually immaculate.....***Damophila panamensis*, adult female (p. 521).**

**DAMOPHILA JULIÆ JULIÆ (Bourcier).**

**JULIE'S HUMMING BIRD.**

*Adult male*.—Pileum brilliant metallic green (yellowish emerald green to golden green); rest of upper parts duller metallic bronze-green, usually more bronzy on rump; tail glossy blue-black; remiges very dark brownish slate or dusky, faintly glossed with violaceous; malar, suborbital, and auricular regions, chin, throat, and sides of neck brilliant metallic green (like pileum); rest of under parts rich metallic violet-blue (deep smalt blue to hyacinth blue), the flanks intermixed with metallic green; under tail-coverts glossy blue-black; femoral tufts white; maxilla dull black, mandible pale brownish or

<sup>a</sup> *Ornismya felicianae* Lesson, Rev. Zool., vii, Dec., 1844, 433 (Guayaquil, w. Ecuador; coll. Abeillé).—*Juliamya felicianae* Gould, Introd. Troch., oct. ed., 1861, 168.—*Damophila felicianae* Sclater, Cat. Am. Birds, 1862, 316.—[*Hylocharis*] *felicianae* Gray, Hand-list, i, 1869, 151, no. 1948.—*D[amophila] julie felicianae* Hartert, Das Tierreich, Troch., 1900, 71 (monogr.).—*Damophila juliae* (not *Ornismya juliae* Bourcier) Salvin, Cat. Birds Brit. Mus., xvi, 1892, 236, part.—*Juliamya typica* (not of Bonaparte) Sclater, Proc. Zool. Soc. Lond., 1860, 283 (Babahoyo, w. Ecuador), 296 (Esmeraldas, w. Ecuador).

<sup>b</sup> The adult female of *D. juliae juliae* not seen by me.



dull whitish (pink or reddish in life); iris dark brown; feet dusky; length (skins), 75–83 (80); wing, 42.5–45.5 (43.8); tail, 29–33 (31.5); culmen, 13.5–15.5 (14.5).<sup>a</sup>

*Adult female*.—(Not seen by me.)

Panama (Bugaba, Chiriquí) and Colombia (Tunja, near Bogotá; Bogotá; Agua Chica; Antioquía; Lower Magdalena; Turbo; Bucaramanga).

*Ornismya juliae* BOURCIER, Ann. Sci. Phys. et Nat. Lyon, v, 1842, 345, pl. 21 (Tunja, near Bogotá, Colombia).

*Ornismya julie* BOURCIER, Rev. Zool., 1842, 373 (Tunja).

*Hylocharis juliae* GRAY, Gen. Birds, i, Dec., 1848, 114.

[*Hylocharis*] *juliae* GRAY, Hand-list, i, 1869, 151, no. 1947.

[*Coeligena*] *β. Damophila julia* REICHENBACH, Aufz. der Colibr., 1854, 7.

[*Coeligena*] *juliae* REICHENBACH, Troch. Enum., 1855, 3, pl. 681, figs. 4494, 4495.

*D[amophila] juliae* CABANIS and HEINE, Mus. Hein., iii, 1860, 40 (Colombia).—HEINE, Journ. für Orn., 1863, 194.

*Damophila juliae* SCLATER, Cat. Am. Birds, 1862, 316 (Bogotá).—WYATT, Ibis, 1871, 378 (Agua Chica, Colombia).—MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., ii, livr. 1, 1875, 56, part (Tunja, Colombia); livr. 3, 1876, pl. 29; iv, livr. 3, 1878, 193, part.—MULSANT, Ann. Soc. Linn. Lyon, xxii, 1876, 208.—BERLEPSCH, Journ. für Orn., 1884, 312 (Bucaramanga, Colombia; crit.); 1887, 333 (Bogotá).—SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 236, part (Bogotá).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 309, part (Turbo, etc., Colombia).

[*Damophila*] *juliae* SHARPE, Hand-list, ii, 1900, 112.

[*Juliomyia*] *typica* BONAPARTE, Rev. et Mag. de Zool., 1854, 255.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 93, part.

*Juliomyia typica* GOULD, Introd. Troch., oct. ed., 1861, 168, part.—SCLATER, Proc. Zool. Soc. Lond., 1857, 17 (Tunja, Colombia).—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1879, 530 (Antioquía, Colombia).—BERLEPSCH, Proc. U. S. Nat. Mus., xi, 1888, 563 (Turbo, Colombia; crit.).—BOUCARD, The Hum. Bird, ii, 1892, 80 (Bogotá).

*Juliomyia typica* GOULD, Mon. Troch., pt. xviii, Sept., 1859; vol. v, 1861, pl. 337.

*Damophila typica* BOUCARD, Gen. Hum. Birds, 1895, 133 (Colombia).

*D[amophila] julie (typica)* HARTERT, Das Tierreich, Troch., 1900, 71.

<sup>a</sup> Eight specimens.

| Locality.                                                 | Wing. | Tail. | Ex-<br>posed<br>culmen. |
|-----------------------------------------------------------|-------|-------|-------------------------|
| MALES.                                                    |       |       |                         |
| Seven adult males from Colombia (mostly from Bogotá)..... | 43.9  | 31.4  | 14.5                    |
| One adult male from Panama (Bugaba, Chiriquí).....        | 43    | 32.5  | 14.5                    |

The Chiriquí specimen has the color of the pileum exceedingly brilliant, quite as much so, in fact, as any specimen of *D. j. felicianae*.

## DAMOPHILA PANAMENSIS Berlepsch.

## PANAMA HUMMING BIRD.

Similar to *D. julix*, but adult male with pileum dull or dark metallic green, similar to or darker than color of back, instead of brilliant yellowish emerald green, like throat.

*Adult male*.—Above metallic green or bronze-green, usually more bronzy on rump, darker (or at least not brighter) on pileum; tail glossy blue-black; remiges very dark brownish slate or blackish, faintly glossed with violaceous; malar, suborbital, and auricular regions, chin, throat, and sides of neck brilliant metallic green, more yellowish or golden anteriorly, purer green or sometimes even bluish green posteriorly; rest of under parts rich deep metallic violet-blue (dark smalt blue or hyacinth blue), the under tail-coverts slightly glossy bluish or greenish black, the femoral tufts white; maxilla dull black, mandible pale brownish or dull whitish (pink or reddish in life); iris dark brown; feet dusky; length (skins), 78–93 (86); wing, 41.5–44 (43.4); tail, 29–31 (30.4); culmen, 14–15.5 (14.7).<sup>a</sup>

*Adult female*.—Above bright metallic bronze-green, more decidedly bronzy on rump and upper tail-coverts; tail blue-black, the middle pair of rectrices usually more or less tinged with dark bluish green, sometimes wholly of this color, the outer pair of rectrices broadly tipped with pale gray, the next pair more narrowly tipped with the same; remiges dusky, faintly glossed with violaceous; under parts pale gray, passing into white posteriorly, the sides of throat sometimes spotted with metallic green; bill, etc., as in adult male; length (skins), 74–78 (77); wing, 41.5–44 (42.6); tail, 25–27.5 (26.4); culmen, 15–16 (15.5).<sup>b</sup>

Panamá (Lion Hill; Panamá; Camerón; Paraiso; Chepo, on Rio Bayano; Calovévora, Veragua); Costa Rica?

*Juliamyia typica* (not of Bonaparte) LAWRENCE, Ann. Lyc. N. Y., vii, 1862, 292 (Lion Hill, Panamá); ix, 1868, 128 (Costa Rica).—FRANTZIUS, Journ. für Orn., 1869, 317 (Costa Rica).—ELLIOT, Classif. and Synop. Troch., 1879, 233, part (Panama).—ZELEDÓN, Cat. Aves de Costa Rica, 1882, 21.

<sup>a</sup> Nine specimens.

<sup>b</sup> Five specimens.

| Locality.                                              | Wing. | Tail. | Ex-<br>posed<br>culmen. |
|--------------------------------------------------------|-------|-------|-------------------------|
| MALES.                                                 |       |       |                         |
| Eight adult males from Panamá.....                     | 43.4  | 30.4  | 14.6                    |
| One adult male said to be from Costa Rica.....         | 44    | 30.5  | 15.5                    |
| Eight adult males of <i>D. julix julix</i> .....       | 43.8  | 31.5  | 14.5                    |
| Ten adult males of <i>D. julix felicianae</i> .....    | 43.7  | 31.1  | 15.1                    |
| FEMALES.                                               |       |       |                         |
| Five adult females of <i>D. panamensis</i> .....       | 42.6  | 26.4  | 15.5                    |
| Four adult females of <i>D. julix felicianae</i> ..... | 42.4  | 27.2  | 15.4                    |

[*Juliamyia*] *typica* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 93, part.

*Damophila juliae* (not *Ornismyia juliae* Bourcier) SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1864, 365 (Panamá).—SALVIN, Proc. Zool. Soc. Lond., 1870, 211 (Calovévora, Panamá).—MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., ii, livr. 1, 1875, 56, part (Panamá).

*D[amophila] panamensis* BERLEPSCH, Journ. für Orn., 1884, 312 (Panamá and Verágua); Proc. U. S. Nat. Mus., xi, 1888, 563, in text.

*Damophila panamensis* SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 237 (Lion Hill, Paraiso, Panamá, and Chepo, Panamá).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 309 (Calovévora, Lion Hill, Paraiso, and Chepo, Panamá; Costa Rica?).—BANGS, Proc. New Engl. Zool. Club, ii, 1900, 20 (Loma del León, Panamá).

*Juliamyia panamensis* BOUCARD, The Hum. Bird, ii, 1892, 80 (Panamá).

*D[amophila] julie panamensis* HARTERT, Das Tierreich, Troch., 1900, 71 (monogr.).

[*Damophila*] *panamensis* SHARPE, Hand-list, ii, 1900, 112.

### Genus POLYERATA Heine.

*Polyerata* <sup>a</sup> HEINE, Journ. für Orn., March, 1863, 194, in text. (Type, *Trochilus amabilis* Gould.)

Rather small Trochilidæ (length about 80–90 mm.) related to *Agyrtria*, but differing in broader median and relatively narrower lateral rectrices, narrower and relatively longer bill, and more varied coloration; adult males with pileum brilliant emerald green and throat bright metallic violet-blue; adult female essentially similar but much duller, with no blue on throat or at most with merely spots of that color, pileum less brilliantly green, and rectrices tipped with gray.

Bill nearly half as long as wing, straight, narrow (terete), not distinctly if at all widened basally, the culmen broadly rounded except mesorhinal portion, where narrowly ridged; tomia smooth; median lateral sulci of maxilla and mandible fairly distinct. Nostril narrow, slit-like, overhung by a rather narrow, partly (sometimes mostly) feathered operculum. Tarsus completely covered with short feathers; middle and inner toes equal in length, the outer decidedly shorter; hallux decidedly shorter than outer toe; toes small, but claws relatively large. Wing more than twice as long as exposed culmen, the outermost primary longest. Tail more than half as long as wing, slightly to decidedly rounded, the middle rectrices rather broad, the lateral rectrices (especially outermost pair) much narrower, all contracted terminally into a rounded point.

*Coloration*.—Above metallic green or bronze-green, the upper tail-coverts bronzy, the middle rectrices dull bronze or greenish bronze, the lateral rectrices dull black, more grayish terminally; abdomen grayish white. Adult male with pileum brilliant metallic green, throat metallic violet-blue; adult female with pileum less brilliant green and throat spotted with dull green or blue.

*Range*.—Costa Rica to western Ecuador. (Four species, including subspecies.)

<sup>a</sup> "Von *πολύρατος*, sehr erwünscht." (Heine.)



KEY TO THE SPECIES OF POLYERATA.<sup>a</sup>

- a.* Bill shorter (culmen 17–19.5 in male, 18.5–20 in female); middle rectrices purplish bronze; adult male with violet or violet-blue throat-patch broader and more violaceous. (Eastern Nicaragua, Costa Rica, and Panamá to western Ecuador.) ***Polyerata amabilis*** (p. 523).
- aa.* Bill longer (culmen 21–23 in male, 21–24 in female); middle rectrices greenish bronze adult male with throat-patch narrower and more bluish. (Western Costa Rica and Panamá.).....***Polyerata decora*** (p. 525).

POLYERATA AMABILIS (Gould).

LOVELY HUMMING BIRD.

*Adult male*.—Forehead and crown brilliant metallic green (yellowish emerald green); occiput, sides of head and neck, hindneck, back, scapulars, and wing-coverts metallic bronze-green, changing to bronze, greenish bronze, or purplish bronze on rump, the upper tail-coverts deep bronze or (usually) purplish bronze; middle pair of rectrices dark metallic bronze or (usually) purplish bronze; rest of tail black, glossed with bluish, the rectrices next to middle pair dark bronze or purplish bronze basally, the exterior ones usually narrowly margined at tip with pale grayish; remiges dark brownish slate or dusky, glossed with violaceous; chin and upper throat opaque black viewed from in front, rather dull metallic green or bronze-green, the feathers margined with dusky, when viewed from behind; lower throat and upper chest bright metallic violet-blue, this area purer blue (sometimes greenish blue) exteriorly; lower chest rather dull metallic green or bluish green, the feathers margined with pale gray or grayish white (especially along median line), the sides and flanks similar, but the green more bronzy; abdomen and median portion of breast pale brownish gray; under tail-coverts dusky gray, faintly glossed with bronze, and margined (more or less broadly) with pale gray or grayish white; femoral tufts white; maxilla dull black, mandible pale brownish or dull whitish (pink or reddish in life), the tip dusky; iris dark brown; feet grayish brown or dusky; length (skins),

<sup>a</sup> In addition to the two species (or subspecies) found within the geographic limits of this work, three additional ones have been described, but they are all autoptically unknown to me.

(1) **Polyerata rosenbergi** Boucard.—*Polyerata rosenbergi* Boucard, Genera Hum. Birds, Dec., 1895, 399 (Rio Dagua, n. w. Colombia; coll. A. Boucard).—*Polyerata rosenbergii* Boucard, The Hum. Bird, v, 1895, 6 (Rio Dagua; crit.).—*A[gyrtria] rosenbergi* Hartert, Novit. Zool., v, 1898, 517 (crit.); Das Tierreich, Troch., 1900, 48.

(2) **Polyerata reini** Berlepsch.—*Polyerata reini* Berlepsch, Orn. Monatsber., April, 1897, 58 (w. Ecuador; coll. Count von Berlepsch).

(3) **Polyerata cyaneotincta** Gounelle.—*Polyerata cyaneotincta* Gounelle, Rev. Franç. d'Orn., no. 2, June 7, 1909, 17 (Colombia; coll. E. Gounelle).

80-94 (87); wing, 53-55.5 (54); tail, 27.5-31 (29.6); culmen, 17-19.5 (18.1).<sup>a</sup>

*Adult female*.—Above similar in coloration to adult male, but forehead and crown not brighter in color than back, etc., the feathers metallic bronze-green at tip, dusky basally; three outer rectrices (on each side) tipped with brownish gray; under parts very pale brownish gray or dull grayish white, spotted (except on abdomen and median portion of breast) with metallic green, these spots sometimes more bluish on chest; otherwise like adult male; length (skins), 82-90 (86); wing, 47.5-51.5 (49.5); tail, 26.5-28 (27.4); culmen, 18.5-20 (19).<sup>b</sup>

Caribbean slope of Nicaragua (Rio Escondido) and Costa Rica (Rio Frio; Talamanca; Pacuare; San Carlos; Bonilla; Jiménez; Guápiles; El Hogár), eastern Panamá (Colón; Lion Hill; Paraiso; Chepo), and southward through Colombia (Turbo; Lower Magdalena; Antioquía; Andes de Quindió; Bogotá) to western Ecuador (Guayaquil; Esmeraldas; Balzár Mountains).

*Trochilus* (————?) *amabilis* GOULD, Proc. Zool. Soc. Lond., 1851, 115 ("New Granada"=Colombia; coll. J. Gould).

[*Coeligena*,  $\beta$ . *Damophila*] *amabilis* REICHENBACH, Aufz. der Colibr., 1854, 7.

[*Coeligena*] *amabilis* REICHENBACH, Troch. Edum., 1855, 3, pl. 681, pls. 4496, 4497.

[*Juliamyia*] *amabilis* BONAPARTE, Rev. et Mag. de Zool., 1854, 255.

*Juliamyia amabilis* SCLATER, Proc. Zool. Soc. Lond., 1857, 17 (Bogotá, Colombia); 1860, 296 (Esmeraldas, w. Ecuador).

*Damophila amabilis* GOULD, Mon. Troch., pt. xviii, Sept., 1859; vol. v, 1861, pl. 341; Introd. Troch., oct. ed., 1861, 170.—LAWRENCE, Ann. Lyc. N. Y., vii, 1862, 292 (Lion Hill, Panamá); ix, 1868, 128 (Pacuare, Costa Rica).—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1864, 365 (Lion Hill).—MULSANT and VERREAUX, Classif. Troch., 1866, 38.—FRANTZIUS, Journ. für Orn., 1869, 317 (Costa Rica).—BOUCARD, Proc. Zool. Soc. Lond., 1878, 71 (San Carlos, Costa Rica); The Hum. Bird, ii, 1892, 80, part (Bogotá).—ELLIOT, Classif. and Synop. Troch., 1879, 234.—ZELEDÓN, Cat. Aves de Costa Rica, 1882, 21.

<sup>a</sup> Twenty-six specimens.

<sup>b</sup> Ten specimens.

| Locality.                                              | Wing. | Tail. | Ex-<br>posed<br>culmen. |
|--------------------------------------------------------|-------|-------|-------------------------|
| MALES.                                                 |       |       |                         |
| One adult male from eastern Nicaragua.....             | 53.5  | 28    | 17                      |
| Ten adult males from eastern Costa Rica (Bonilla)..... | 54    | 30    | 18.1                    |
| Seven adult males from eastern Panamá.....             | 53.9  | 29.9  | 18.4                    |
| Six adult males from central Colombia (Bogotá).....    | 54.2  | 28.9  | 18.1                    |
| Two adult males from western Ecuador (Guayaquil).....  | 53.7  | 29.5  | 18                      |
| FEMALES.                                               |       |       |                         |
| One adult female from eastern Nicaragua.....           | 48.5  | 28    | 18.5                    |
| Two adult females from eastern Costa Rica.....         | 50.5  | 27    | 19.2                    |
| Five adult females from eastern Panamá.....            | 49.5  | 27.8  | 19.1                    |
| One adult female from central Colombia (Bogotá).....   | 51.5  | 27    | 19.5                    |
| One adult female from western Ecuador (Guayaquil)..... | 49.5  | 26.5  | 18.5                    |

- D[amophila] amabilis* CABANIS and HEINE, Mus. Hein., iii, 1860, 40 (Colombia).  
*[Damophila] amabilis* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 93, part.  
*Polyerata amabilis* HEINE, Journ. für Orn., 1863, 194, in text.—MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., ii, livr. 1, 1875, 52 (Costa Rica; Colombia; Ecuador); iv, livr. 3, 1878, 193 (crit.).—BERLEPSCH, Journ. für Orn., 1884, 312 (Bucaramanga, Colombia); 1887, 333 (Bogotá, Colombia); Proc. Zool. Soc. Lond., 1885, 118 (Esmeraldas, w. Ecuador).—SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 237 (Costa Rica; Lion Hill, Paraiso Station, and Chepe, Isth. Panamá; Antioquia, Quindíú Mts., and Bogotá, Colombia; Esmeraldas and Balzár Mts., w. Ecuador).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 310.—RICHMOND, Proc. U. S. Nat. Mus., xvi, 1893, 517 (Rio Frio, Costa Rica, and Rio Escondido, Nicaragua).—BOUCARD, Gen. Hum. Birds, 1894, 142, part (Colombia; Ecuador; San Carlos, Costa Rica).—HARTERT (E. and C.), Novit. Zool., i, 1894, 10 (Nanegál, Ecuador).  
*[Polyerata] amabilis* MULSANT, Ann. Soc. Linn. Lyon, n. s., xxii, 1876, 208.—HEINE and REICHENOW, Nom. Mus. Hein. Orn., 1890, 180 (Bogotá).  
*[Hylocharis] amabilis* GRAY, Hand-list, i, 1869, 150, no. 1946.  
*Agyrtia amabilis* HARTERT, Novit. Zool., v, 1898, 517 (crit.).—OBERHOLSER, Proc. U. S. Nat. Mus., xxiv, 1902, 316 (Guayaquil, w. Ecuador; crit.).  
*A[gyrtia] amabilis* HARTERT, Das Tierreich, Troch., 1900, 48 (monogr.).  
*[Agyrtia] amabilis* SHARPE, Hand-list, ii, 1900, 105.  
*Agyrtia amabilis amabilis* CARRIKER, Ann. Carnegie Mus., vi, 1910, 525 (Caribbean lowlands, Costa Rica; habits).

#### POLYERATA DECORA Salvin.

##### CHARMING HUMMING BIRD.

Similar to *P. amabilis*, but bill much longer (both relatively and absolutely); adult male with whole pileum (that is, occiput as well as forehead and crown) brilliant metallic green, chin and upper throat dull bronzy or greenish (not appearing black when viewed from in front), blue area of lower throat and upper chest narrower and decidedly less violaceous, upper tail-coverts usually less purplish bronze, middle rectrices olivaceous bronze (never purplish), and rest of tail much duller blackish, glossed with bronzy rather than bluish.

*Adult male*.—Pileum brilliant metallic green (burnished emerald green or slightly yellowish or golden emerald); hindneck, sides of head and neck, back, scapulars, and wing-coverts metallic bronze-green or greenish bronze, the rump usually more decidedly bronzy; upper tail-coverts rather dull bronze or olive-bronze (more rarely dull coppery bronze); middle pair of rectrices dull olive-bronze, the remaining rectrices dusky, faintly glossed with bronze, the gloss becoming more violaceous terminally, especially on outer rectrices; remiges dark brownish slate or dusky, glossed with purplish; chin and upper throat dull dusky or sooty, the feathers with terminal portion metallic green when viewed in certain lights; lower throat and upper chest bright metallic blue (cobalt to ultramarine exteriorly, more violaceous centrally); lower chest dull metallic green or bluish green, the feathers margined with pale brownish gray; sides and



flanks metallic bronze-green, the feathers margined with pale brownish gray; abdomen and median portion of breast plain pale brownish gray, fading to dull white toward anal region; femoral tufts white; under tail-coverts deep gray or olive-gray, broadly margined with pale gray or grayish white; maxilla dull black, mandible pale brownish or dull whitish (pink or reddish in life), with dusky tip; iris dark brown; feet grayish brown or dusky; length (skins), 87-95 (91); wing, 52-56.5 (54); tail, 27.5-30 (29.2); culmen, 21-23 (21.6).<sup>a</sup>

*Adult female*.—Above similar to adult male, but pileum concolor with hindneck, back, etc.; middle rectrices much duller bronzy, the remaining rectrices dull olivaceous-bronze passing into dusky terminally or subterminally, and tipped (broadly on two outer) with brownish gray; under parts as in adult male, but chin, throat, and chest mostly very pale brownish gray or dull grayish white, spotted with metallic green, these spots usually more or less bluish on lower throat or upper chest; otherwise like adult male; length (skins), 86-95 (90); wing, 50-54 (51.2); tail, 26.5-29 (27.9); culmen, 21-24 (22.8).<sup>b</sup>

Western Panamá (Volcán de Chiriquí; Bugaba; Divala) and southwestern Costa Rica (Pozo Azul de Pirris; El Pozo de Térraba; Pozo del Rio Grande; Boruca; Paso Real, Boruca; Buenos Aires; El General; San Pedro; Rio Turubales).

*Damophila amabilis* (not of Gould) SALVIN, Proc. Zool. Soc. Lond., 1870, 211 (Volcán de Chiriquí and Bugaba, Panamá).—ZELEDÓN, Anal. Mus. Nac. Costa Rica, i, 1887, 122 (Pozo Azul de Pirris, Costa Rica).

[*Damophila*] *amabilis* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 93, part.

*Polyerata amabilis* CHERRIE, Expl. Zool. Merid. Costa Rica, 1893, 45 (Lagarto and Boruca, s. w. Costa Rica).—BOUCARD, Gen. Hum. Birds, 1894, 142, part (Chiriquí).

*Polyerata decora* SALVIN, Ann. and Mag. Nat. Hist., vii, 1891, 377 (Volcán de Chiriquí, Panamá; coll. Salvin and Godman); Cat. Birds Brit. Mus., xvi, 1892, 238.—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 311.—BOUCARD, Gen. Hum. Birds, 1895, 399.

*Agyrtria decora* HARTERT, Das Tierreich, Troch., 1900, 48 (monogr.).

[*Agyrtria*] *decora* SHARPE, Hand-list, ii, 1900, 106.

*Agyrtria decora* BANGS, Auk, xviii, 1901, 359 (Divala, Panamá); xxiv, 1907, 295 (Boruca, Paso Real, and Pozo del Rio Grande, s. w. Costa Rica).

*Agyrtria amabilis decora* CARRIKER, Ann. Carnegie Mus., vi, 1910, 525 (s. w. Costa Rica; crit.).

#### Genus CYANOPHAIA Reichenbach.

[*Hylocharis*]  $\beta$ . *Cyanophaia* REICHENBACH, Aufz. der Colibr., 1854, 10. (Type, as fixed by Gray, Cat. Gen. and Subgen. Birds, 1855, 142, *Trochilus bicolor* "Linn." = Gmelin.)

*Augasma* (not *Augasmus* Motsch[?], 1858) GOULD, Proc. Zool. Soc. Lond., pt. xxviii, pt. ii, Aug., 1860, 305. (Type, *A. smaragdineum* Gould.)

<sup>a</sup> Ten specimens, from Costa Rica.

<sup>b</sup> Twelve specimens (10 from Costa Rica, 2 from Chiriquí).

*Timolia* MULSANT, Ann. Soc. Linn. Lyon, n. s., xxii, 1876, 219 (Cat. Ois.-Mouch., 1876, 23). (Type, *Thalurania lerchi* Mulsant and Verreaux.)

*Gmelinius* <sup>a</sup> BOUCARD, Genera of Humming Birds (in Humming Bird, iv, pt. 1), March, 1894, 108. (Type, *Trochilus bicolor* Gmelin.)

Medium-sized or rather large Trochilidæ (length about 100 mm.) with bill about as long as head, straight, rather broad and depressed basally, thicker (in vertical section) subterminally than in middle portion, nasal operculum mostly unfeathered, tail nearly two-thirds as long as wing, emarginate, with rather broad rectrices, the adult male metallic-green above and below, passing into dark blue on head and upper tail-coverts and dark steel-blue on tail; the female light brownish gray below, middle rectrices bronze-green, lateral rectrices gray or bronze-greenish basally, steel-blue (broadly) subterminally, and tipped with light gray.

Bill about as long as head, straight, narrowly cuneate in vertical profile, contracted vertically in middle portion, or thickened, vertically, toward tip; culmen broadly rounded but basally contracted into a rather distinct ridge; tomia smooth; mandible with a rather distinct longitudinal groove or sulcus nearer to tomium than to gonys, the maxilla with a similar but less distinct sulcus along each side of culmen. Nasal operculum broad, strongly convex and decumbent basally, mostly unfeathered; frontal feathering forming two narrow antiæ (one on each side of mesorhinium), extending to beyond middle of nasal operculum. Tarsus feathered on upper anterior portion; middle and inner toes equal in length, the outer (apparently) slightly shorter; hallux shorter than outer toe. Wing a little more than three times as long as exposed culmen, the outermost primary longest. Tail nearly two-thirds as long as wing, emarginate, the rectrices rather broad.

*Coloration*.—Adult male rather dark metallic-green above and below, passing into deep blue on head and upper tail-coverts, the tail uniform dark steel-blue; adult female light brownish gray beneath, bronze-green above (including middle rectrices), the outer rectrices gray or bronze-greenish basally, steel-blue (broadly) subterminally, and tipped with pale gray or grayish white.

*Range*.—Colombia to Brazil; Lesser Antillean islands of Dominica and Martinique. (Seven species.<sup>b</sup>)

#### KEY TO THE SPECIES OF CYANOPHAIA.<sup>c</sup>

- a. Upper tail-coverts bluish black, like rectrices. (Islands of Dominica and Martinique, Lesser Antilles.).....*Cyanophaia bicolor* (p. 529).

<sup>a</sup> Named for Johann Friedrich Gmelin.

<sup>b</sup> Of these I have seen only one (*C. bicolor*) on which the above diagnosis and description are based exclusively.

<sup>c</sup> Adapted from Hellmayr, Novit. Zool., v, no. 1, June, 1908, 7, 8. Of the seven species recognized by Hellmayr I have seen only *C. bicolor*.

aa. Upper tail-coverts not bluish black.

b. Upper tail-coverts coppery red.

c. Upper parts with a supra-scapular area of blue; pileum dark green like back. (Cayenne.).....*Cyanophaia scapulata* (extralimital).<sup>a</sup>

cc. Upper parts without any blue supra-scapular band; pileum brilliant blue.

d. Under parts golden green (sometimes bluish on chin); under tail-coverts bronzy olive, narrowly margined with white; upper tail-coverts (less extensively) coppery red; middle rectrices bluish black. (Colombia.)

.....*Cyanophaia lerchi* (extralimital).<sup>b</sup>

dd. Under parts bluish green; under tail-coverts violaceous golden bronze; upper tail-coverts (more extensively) golden bronze; margined with coppery red; middle rectrices violaceous golden bronze. (Southern Brazil.).....*Cyanophaia caeruleo-lavata* (extralimital).<sup>c</sup>

bb. Upper tail-coverts not coppery.

c. Upper tail-coverts bronzy olive. (Southeastern Brazil.)

.....*Cyanophaia chlorocephala* (extralimital).<sup>d</sup>

cc. Upper tail-coverts golden green, like back.

d. Under tail-coverts brilliant green; head brilliant light greenish blue. (Brazil; Colombia?).....*Cyanophaia smaragdinea* (extralimital).<sup>e</sup>

dd. Under tail-coverts white; head golden green. (Eastern Brazil.)

.....*Cyanophaia chlorophana* (extralimital).<sup>f</sup>

<sup>a</sup> *Eucephala scapulata* Gould, *Introd. Troch.*, oct. ed., 1861, 166 (Cayenne?; coll. J. Gould); Elliot, *Classif. and Synop. Troch.*, 1879, 229; Salvin, *Cat. Birds Brit. Mus.*, xvi, 1892, 243.—*Thaluranina scapulata* Simon, *Feuille Natural.*, xxvii, 1897, 174.—*T[haluranina] scapulata* Hellmayr, *Novit. Zool.*, xv, 1908, 8.

<sup>b</sup> *Thaluranina lerchi* Mulsant and Verreaux, *Ann. Soc. Linn. Lyon*, n. s., xviii, Jan., 1872, 108 (Colombia); type now in coll. Am. Mus. Nat. Hist.; Hellmayr, *Novit. Zool.*, xv, 1908, 9 (crit.).—*Timolia lerchi* Mulsant, *Ann. Soc. Linn. Lyon* (2), xxii, 1876, 219; Elliot, *Classif. and Synop. Troch.*, 1879, 232.—*Eucephala lerchi* Elliot, *Ibis*, 1874, 264; Mulsant and Verreaux, *Hist. Nat. Ois.-Mouch.*, iv, 1877, 191, with plate.—*Agyrtia tenebrosa* Hartert, *Bull. Brit. Orn. Club*, x, no. lxx, Oct. 31, 1899, p. xv (Bogotá, Colombia; coll. Tring. Mus.).—*A[gyrtia] tenebrosa* Hartert, *Das Tierreich, Troch.*, 1900, 229.

<sup>c</sup> *Eucephala caeruleo-lavata* Gould, *Proc. Zool. Soc. Lond.*, 1860, 306 (São Paulo, s. Brazil; coll. J. Gould); *Mon. Troch.*, v, 1861, pl. 333; Salvin, *Cat. Birds Brit. Mus.*, xvi, 1892, 244.—*T[haluranina] caeruleolavata* Hartert, *Das Tierreich, Troch.*, 1900, 84.—*T[haluranina] caeruleo-lavata* Hellmayr, *Novit. Zool.*, xv, 1908, 8 (diagnosis; crit.).

<sup>d</sup> *Hylocharis chlorocephalus* Bourcier, *Rev. et Mag. de Zool.*, ser. 2, vi, 1854, 457. ("Guaranda, Ecuador," i. e., Rio de Janeiro, Brazil, according to Hellmayr).—*[Agyrtia] chlorocephala* Reichenbach, *Troch. Enum.*, 1855, 7.—*Eucephala chlorocephala* Gould, *Mon. Troch.*, v, 1861, pl. 332; Salvin, *Cat. Birds Brit. Mus.*, xvi, 1892, 241.—*[Saucerottea] chlorocephala* Simon, *Cat. Troch.*, 1897, 12.—*T[haluranina] chlorocephala* Hellmayr, *Novit. Zool.*, xv, 1908, 8 (diagnosis; crit.).

<sup>e</sup> *Augasma smaragdineum* Gould, *Proc. Zool. Soc. Lond.*, 1860, 305 ("Brazil;" coll. J. Gould).—*A[ugasma] smaragdineum* Hartert, *Das Tierreich, Troch.*, 1900, 82.—*Eucephala smaragdinea* Salvin, *Cat. Birds Brit. Mus.*, xvi, 1892, 240, part (adult male and young male).—*[Timolia] smaragdinea* Simon, *Cat. Troch.*, 1897, 19.—*Thaluranina smaragdinea* Hellmayr, *Novit. Zool.*, xv, June, 1908, 10 (crit.).—*Eucephala smaragdo-caerulea* Gould, *Mon. Troch.*, v, 1861, pl. 331.—*Timolia lerchi* (not *Thaluranina lerchi* Mulsant and Verreaux) Salvin and Godman, *Ibis*, 1881, 596; Sharpe, *Suppl. Gould's Mon. Troch.*, 1885, pl. 57.

<sup>f</sup> *Th[aluranina] chlorophana* Simon, *Cat. Troch.*, 1897, 20, footnote (Bahia, Brazil; coll. E. Simon).—*T[haluranina] chlorophana* Hartert, *Das Tierreich, Troch.*, 1900, 84; Hellmayr, *Novit. Zool.*, xv, 1908, 8 (diagnosis).



## CYANOPHAIA BICOLOR (Gmelin).

## WAGLER'S WOOD-NYMPH.

*Adult male*.—Head, all round (including forehead, crown, loreal and malar regions, chin, and upper throat), dark metallic violet-blue (hyacinth blue), the posterior portion of crown more greenish blue, passing into bluish green on occiput, this into bronze-green on hindneck, back, scapulars, wing-coverts, and upper rump, the lower rump and shorter upper tail-coverts more bluish green, the longer upper tail-coverts dark greenish steel blue; tail wholly deep or dark steel blue; remiges glossy bluish black, or black glossed with violet-blue; lower throat and chest bright metallic bluish green, passing into rather dark bronze-green or more golden green on rest of under parts; femoral tufts (small) pale gray or grayish white; maxilla dull black, mandible dull black for terminal half (more or less), pale brownish (pinkish or reddish in life?) basally; iris dark brown; feet dusky; length (skins), 95–108 (102); wing, 58–62.5 (60.1); tail, 34.5–42.5 (38.1); culmen, 15.5–18.5 (17).<sup>a</sup>

*Adult female*.—Pileum metallic green (varying from bluish green to slightly bronzy green); hindneck, upper back, scapulars, and wing-coverts golden bronze or golden green, passing through more greenish bronze on lower back and rump into golden green on upper tail-coverts; middle pair of rectrices metallic bronze, passing into bluish green or greenish blue terminally; second, third, and fourth pairs of rectrices dark greenish steel blue, metallic bronze basally, the third slightly, the fourth broadly, tipped with pale brownish gray; fifth (outermost) pair similar to fourth but pale grayish tip still broader and basal portion brownish gray instead of bronzy; remiges dusky slate glossed with violet or violet-blue; loreal and auricular regions dusky; malar region and under parts pale brownish gray, passing into golden green or bronze on sides and flanks; bill, etc., as in adult male, but mandible wholly dusky; length (skins), 91–108 (101); wing, 55.5–58 (56.7); tail, 32.5–38 (35.6); culmen, 17–18 (17.7).<sup>b</sup>

<sup>a</sup> Fourteen specimens.

<sup>b</sup> Eight specimens.

| Locality.                                                      | Wing. | Tail. | Ex-<br>posed<br>culmen. |
|----------------------------------------------------------------|-------|-------|-------------------------|
| MALES.                                                         |       |       |                         |
| Ten adult males from Dominica.....                             | 60.5  | 38.1  | 16.6                    |
| Two adult males from Martinique.....                           | 59    | 38    | 18                      |
| Two adult males said to be from Brazil (but probably not)..... | 59.2  | 38.2  | 17.7                    |
| FEMALES.                                                       |       |       |                         |
| Six adult females from Dominica.....                           | 57    | 36.3  | 17.6                    |
| One adult female from Martinique.....                          | 56    | 34.5  | 18.5                    |
| One adult female said to be from Brazil.....                   | 56    | 32.5  | .....                   |

Islands of Dominica and Martinique (also Guadeloupe?), Lesser Antilles; Brazil?; Guiana?.

[*Trochilus*] *bicolor* GMELIN, Syst. Nat., i, pt. 1, 1788, 496 (based on *Colibri* Nr. 2, Fermin, Surin. 2, p. 195; *Saphir-émeraude*, Buff. Hist. Nat. Ois. 6, p. 26; *Sapphire-and Emerald-Hummingbird* Latham, Syn. i, pt. 2, p. 775, n. 40.)—LATHAM, Index Orn., i, 1790, 314.

*Trochilus bicolor* AUDEBERT and VIEILLOT, Ois Dorés, i, 1801, 75, pl. 36.—VIEILLOT, Nouv. Dict. d'Hist. Nat., vii, 1817, 373 (Guadeloupe; Martinique).

*T[rochilus] bicolor* VIEILLOT, Tab. Enc. Méth., ii, 1822, 571.—LICHTENSTEIN, Verz. Doubl., 1823, 14 ('Brazil').

[*Hylocharis*] *β. Cyanophaia bicolor* REICHENBACH, Aufz. der Colibr., 1854, 10.

*Hylocharis bicolor* REICHENBACH, Troch. Enum., 1855, 8.—BURMEISTER, Syst. Ueb. Th. Bras., ii, 1856, 348.

[*Polytmus*] *bicolor* GRAY, Hand-list, i, 1869, 130, no. 1661.

*Ornismya bicolor* LESSON, Hist. Nat. Ois.-Mouch., 1829, pp. xxix, 161, pls. 49, 50; Les Troch., 1831, 58, 60, pls. 16, 17 (Guiana; Brazil); Index Gen. and Synop. Troch., 1832, p. xxxviii.

*C[hlorostilbon] bicolor* CABANIS and HEINE, Mus. Hein., iii, 1860, 46 (Brazil).

*Thalurania bicolor* ELLIOT, Classif. and Synop. Troch., 1879, 102 (Brazil; Dominica).—CORY, Auk, iii, 1886, 353 (descr. and synonymy); 1887, 96 (Martinique); Birds West Ind., 1889, 148; Cat. West Ind. Birds, 1892, 106, 133 (Dominica).—SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 86 (Dominica).—VERRILL (G. and A. H.), Trans. Conn. Ac. Arts and Sci., viii, 1892, 333 (Dominica; habits; descr. nest and eggs).

*Gmelinius bicolor* BOUCARD, Gen. Hum. Birds, March, 1894, 108 (Dominica).

[*Timolia*] *bicolor* SIMON, Cat. Troch., 1897, 19.

*Augasma bicolor* HARTERT, Journ. für Orn., 1900, 361 (crit.).

*A[ugasma] bicolor* HARTERT, Das Tierreich, Troch., 1900, 82 (monogr.).

[*Augasma*] *bicolor* SHARPE, Hand-list, ii, 1900, 115.

*Ornismya wagleri* LESSON, Hist. Nat. Ois.-Mouch., 1829, pp. xvii, 203, pl. 73 (Brazil); Index Gen. and Synop. Troch., 1832, p. xxi (Brazil).

*H[ylocharis] wagleri* GRAY, Gen. Birds, i, Dec., 1848, 114.

[*Thalurania*] *wagleri* BONAPARTE, Consp. Av., i, 1850, 77 (Brazil).—PELZELN, Orn. Bras., iv, Abth., 1870, 408.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 83.—MULSANT, Ann. Soc. Linn. Lyon, n. s., xxii, 1876, 219.—CORY, List Birds West Ind., 1885, 17.

*Thalurania wagleri* GOULD, Proc. Zool. Soc. Lond., 1852, 9; Mon. Troch., ii, 1857, pl. 109.—BONAPARTE, Rev. et Mag. de Zool., 1854, 254.—MULSANT and VERREAUX, Classif. Troch., 1866, 51; Hist. Nat. Ois.-Mouch., iii, livr. 1, 1876, 80.—SALVIN and ELLIOT, Ibis, 1873, 360 (Brazil; crit.).—LAWRENCE, Ann. N. Y. Ac. Sci., i, 1878, 46 (Dominica); Proc. U. S. Nat. Mus., i, 1878, 61, 487 (Dominica; descr. female).—SCLATER, Proc. Zool. Soc. Lond., 1889, 326, 327 (Dominica).—VERRILL (G. and A. H.), Trans. Conn. Ac. Arts and Sci., viii, 1892, 333, pl. 26, fig. 5 (Dominica; habits; descr. nest and eggs).

*T[halurania] wagleri* CABANIS and HEINE, Mus. Hein., iii, 1860, 24 (Pará).

*Thalurania? wagleri* GOULD, Introd. Troch., oct. ed., 1861, 79 (Brazil).

[*Coeligena. α. Thalurania*] *wagleri* REICHENBACH, Aufz. der Colibr., 1854, 7.

*Coeligena wagleri* REICHENBACH, Troch. Enum., 1855, 3, pl. 702, figs. 4576-4577.

Genus THALURANIA Gould.

*Thalurania* <sup>a</sup> GOULD, Proc. Zool. Soc. Lond., 1848, 13. (Type, as fixed by Gray, Cat. Gen. and Subgen. Birds, 1855, 21, *Trochilus furcatus* Gmelin.)

<sup>a</sup> θάλλω, vireo et οὐράνιος, caelestis. (Gould.)

*Thaluronia* (misprint?) GRAY, Gen. Birds, i, App., 1849, 5, in text.

*Glaucopes* "Less[on]" GRAY, Gen. Birds, i, Dec., 1848, 108, in text. (Type, *Trochilus glaucopsis* Gmelin.)

*Glaucopis* BURMEISTER, Syst. Ueb. Th. Bras., ii, 1856, 333. (Type, *Trochilus glaucopis* Gmelin.)

Medium-sized Trochilidæ (length about 95–115 mm. in adult males, 90–98 in adult females) with bill about as long as head, straight or slightly decurved, the terminal portion of maxillary tomium serrated; nasal operculum mostly concealed, tail forked or (in females) emarginate, with relatively broad lateral rectrices, the adult males with under parts bright metallic green or (often) with under parts of body violet and tail uniform blue-black or violet-black, the adult females with under parts pale gray (under parts of body sometimes metallic greenish), and lateral rectrices tipped with pale grayish (sometimes greenish or grayish basally).

Bill about as long as head, straight or slightly decurved, terete or slightly broader than deep basally; culmen broadly rounded, but basally contracted into a distinct narrow ridge; terminal portion of maxillary tomium serrated; mandible with a distinct lateral groove or sulcus, the maxilla with indication of the same. Nasal operculum rather narrow, mostly covered by frontal feathering, which forms distinct antiæ on each side of mesorhinium, extending forward at least to middle of nasal operculum. Tarsus completely clothed with short feathers; middle and inner toes about equal in length, the outer slightly shorter, the hallux shorter than outer toe. Wing about three times as long as culmen, the outermost primary longest. Tail nearly as long as wing to less than two-thirds as long, forked in adult males, emarginate or slightly forked in females, the lateral rectrices relatively broad, all rather rigid, with rounded tip.

*Coloration*.—Adult males metallic green or green with violet or black (sometimes both) above, the forehead and crown sometimes brilliantly metallic green or violet; tail uniform black, blue-black or violet-black; chin and throat, sometimes chest also—in some species whole or most of under parts—very bright metallic green, the under parts of body usually rich metallic violet, in abrupt contrast. Adult females metallic green or bronze-green above, pale gray beneath, the lateral rectrices tipped with pale gray and sometimes gray or greenish basally.

*Range*.—Western Mexico to Cayenne, southeastern Brazil, Bolivia, and Peru. (About sixteen species.)

#### KEY TO THE SPECIES AND SUBSPECIES OF THALURANIA.

- a. Throat and chest bright metallic green; under parts of body metallic green, violet-blue, or blackish. (*Adult males*.)
- b. Lesser wing-coverts and anterior scapular region (sometimes upper back also) violet or violet-blue; tail dark steel blue or dark violaceous-blue.



- c. Under parts of body violet-blue. (*Thalurania colombica*.)
- d. Upper back green or bronze-green medially; lower back and rump brighter green, the occiput and hindneck bronze-green or bronze. (Colombia and eastern Panamá.) . *Thalurania colombica colombica*, adult male (p. 532).
- dd. Upper back wholly violet or violet-blue; lower back and rump darker and duller green, the occiput and hindneck blackish green. (Costa Rica and western Panamá.)  
*Thalurania colombica venusta*, adult male (p. 534).
- cc. Under parts of body bright metallic green (like throat and chest) except laterally. (Eastern Guatemala to southeastern Honduras.)  
*Thalurania townsendi*, adult male (p. 536).
- bb. Lesser wing-coverts and whole of scapular region bronze-green; breast and abdomen blackish; tail black. (State of Jalisco, western Mexico.)  
*Thalurania ridgwayi*, adult male (p. 537).
- aa. Throat and chest pale gray or grayish white. (*Adult females*.)
- b. Sides and flanks more extensively green or bronze-green. (*Thalurania colombica*.)
- c. Under parts of body broadly pale gray medially.  
*Thalurania colombica colombica*, adult female (p. 533).
- cc. Under parts of body very narrowly grayish medially (usually wholly green).  
*Thalurania colombica venusta*, adult female (p. 535).
- bb. Sides and flanks less extensively green or bronze-green.  
*Thalurania townsendi*, adult female (p. 536).

### THALURANIA COLOMBICA COLOMBICA (Bourcier).

#### COLOMBIAN WOOD-NYMPE.

*Adult male*.—Forehead and anterior portion of crown bright metallic bluish violet or royal purple; rest of pileum dull bronze-green, bronze, or coppery bronze, the feathers narrowly and indistinctly margined with dusky; lower hindneck and upper back metallic bluish green or greenish blue, with a lateral patch (mostly on anterior scapulars) of intense violet-blue (confluent with the similar color of the lesser wing-coverts and under parts), the two patches of opposite sides sometimes narrowly but brokenly connected; lower back, rump, and upper tail-coverts deep metallic bluish green,<sup>a</sup> varying to more bronzy green; tail glossy blue-black or black glossed with blue (sometimes slightly violaceous); greater wing-coverts metallic bluish green; remiges dark brownish slate or dusky, faintly glossed with violaceous; chin, throat, and chest bright metallic yellowish emerald green, with a convex posterior outline, the feathers pale gray or grayish white beneath surface, dark gray basally; breast and abdomen rich metallic violet-blue or bluish violet (between hyacinth blue and royal purple), the feathers dark gray beneath surface; sides and flanks mixed dark metallic violet-blue and bluish green; under tail-coverts broadly white laterally and basally, bluish black or dark steel blue medially and terminally, the latter in form of a broad wedge-shaped area; bill dull

<sup>a</sup> Near terre-verte in hue, but much brighter.

black; iris dark brown; feet dusky; length (skins), 89–109 (99); wing, 52.5–59 (55.7); tail, 36–45.5 (40); culmen, 17.5–20 (19).<sup>a</sup>

*Adult female*.—Above metallic green, duller and more bronzy on pileum (where feathers show more or less of the dusky grayish of basal portion), brighter and more bluish green posteriorly; middle pair of rectrices darker metallic green or bluish green, sometimes passing into blackish terminally; other rectrices glossy blue-black, or black glossed with steel blue (sometimes slightly violaceous), the passing into metallic green basally, two outermost broadly tipped with pale brownish gray or dull grayish white; remiges dusky brownish slate, faintly glossed with violaceous; malar region, chin, throat, and chest very pale brownish gray; <sup>b</sup> breast and abdomen deeper brownish gray, the sides and flanks spotted with metallic green; under tail-coverts, anal region, and femoral tufts white; bill dull black, the mandible sometimes more brownish; iris dark brown; feet grayish brown or dusky; length (skins), 78–101 (92); wing, 50–53.5 (51.9); tail, 29–33 (30.8); culmen, 17.5–21 (18.1).<sup>c</sup>

*Immature male*.—Above similar to the adult female, but tail as in adult male; chin, throat, and chest sooty grayish, glossed with bronze-green, paler gray feathers, with a terminal spot of metallic yellowish emerald green, indicating the adult plumage, appearing along the median line; breast and abdomen darker sooty gray, varying to nearly sooty brown, the metallic violet-blue feathers of the adult dress appearing first on anterior or median portions; under tail-coverts as in adult male.

Colombia (Bogotá; Valparaiso, Oñaca, El Libano, Don Amo, Las Nubes, Minca, San José, Pueblo Viejo, Chinchicua Valley, San Miguél, Bonda, Palomina, and Sierra Nevada, Santa Marta; Herradura; Buca-

<sup>a</sup> Twenty-two specimens.

<sup>b</sup> About no. 9 or no. 10 in tone, but much browner, approaching drab-gray in hue.

<sup>c</sup> Twelve specimens.

| Locality.                                                      | Wing. | Tail. | Ex-<br>posed<br>culmen. |
|----------------------------------------------------------------|-------|-------|-------------------------|
| MALES.                                                         |       |       |                         |
| Ten adult males from central Colombia (Bogotá).....            | 54.9  | 41.6  | 18.3                    |
| Ten adult males from northeastern Colombia (Santa Marta).....  | 56.5  | 38.6  | 18.5                    |
| Two adult males from Panamá.....                               | 54.7  | 39    | 19.5                    |
| Two adult males of <i>T. c. venusta</i> from Panamá.....       | 52    | 37.2  | 18.2                    |
| Ten adult males of <i>T. c. venusta</i> from Costa Rica.....   | 54.5  | 40.2  | 19.9                    |
| FEMALES.                                                       |       |       |                         |
| Four adult females from Bogotá.....                            | 51.7  | 31.7  | 18.7                    |
| Eight adult females from Santa Marta.....                      | 51.9  | 30.4  | 18.9                    |
| Three adult females of <i>T. c. venusta</i> from Panamá.....   | 49    | 28.7  | 20.8                    |
| Ten adult females of <i>T. c. venusta</i> from Costa Rica..... | 49.8  | 30    | 20.8                    |

ramanga; Ibagué), Venezuela (San Cristóbal), and eastern Panamá (Colón; Panamá).

*Ornismya colombica* BOURCIER, Rev. Zool., vi, Jan., 1843, 2 (Colombia; coll.?);

Ann. Sci. Phys. et Nat. Lyons, vi, 1844, pl. 6.

*P[olytmus] columbicus* GRAY, Gen. Birds, i, Dec., 1848, 108.

*[Polytmus] columbicus* GRAY, Hand-list, i, 1869, 130, no. 1658.

*Thalurania colombica* GOULD, Proc. Zool. Soc. Lond., 1852, 8; Monogr. Troch., ii, 1858, pl. 106; Introd. Troch., oct. ed., 1861, 78.—BONAPARTE, Rev. Zool., 1854, 254.—SCLATER, Cat. Am. Birds, 1862, 294 (Bogotá, Colombia).—MULSANT and VERREAUX, Classif. Troch., 1866, 51; Hist. Nat. Ois.-Mouch., iii, livr. 1, 1876, 63; iv, livr. 2, 1877, pl. 56; livr. 3, 1878, 217 (crit.).—WYATT, Ibis, 1871, 376 (Herradura, Colombia, 4,000 ft.).—SALVIN and ELLIOT, Ibis, 1873, 355, part (monogr.).—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1875, 237 (San Cristóbal, Venezuela).—MULSANT, Ann. Soc. Linn. Lyons, xxii, 1876, 218.—ELLIOT, Classif. and Synop. Troch., 1879, 99, part (Colombia).—SALVIN and GODMAN, Ibis, 1880, 17 (Sierra Nevada de Santa Marta, and Minca, Colombia, 2,000 ft.).—BERLEPSCH, Journ. für Orn., 1884, 310 (Bucaramanga, Colombia); 1887, 319 (Bogotá, Colombia; synonymy).—SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 79, 652, part (Colombian and Venezuelan localities and references).—BOUCARD, The Hum. Bird, ii, 1892, 75 (Bogotá); Gen. Hum. Birds, 1893, 101.—BANGS, Proc. Biol. Soc. Wash., xii, 1898, 135 (Santa Marta, Colombia), 174 (San Miguél and Palomina, Santa Marta).—STONE, Proc. Ac. Nat. Sci. Phila., 1899, 306 (Ibagué, centr. Colombia).—ALLEN, Bull. Am. Mus. N. H., xiii, 1900, 141 (Bonda, etc., Santa Marta).

*T[halurania] colombica* CABANIS and HEINE, Mus. Hein., iii, 1860, 24 (Colombia).

*[Thalurania] colombica* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 83, part (Colombia).

*[Coeligena. α. Thalurania] colombica* REICHENBACH, Aufz. der Colibr., 1854, 7.

*Coeligena colombica* REICHENBACH, Troch. Enum., 1855, 3, pl. 685, figs. 4511, 4512.

*Thalurania colombica* BOUCARD, The Hum. Bird, i, no. 4, 1901, 26 (descr. of aberrant or discolored male).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 266, part (Colombia; Venezuela).

*T[halurania] colombica* HARTERT, Das Tierreich, Troch., 1900, 86 (monogr.).

*[Thalurania] colombica* SHARPE, Hand-list, ii, 1900, 116.

*[Coeligena. α. Thalurania] puella* REICHENBACH, Aufz. der Colibr., 1854, 7.

*Coeligena puella* REICHENBACH, Troch. Enum., 1855, 3.

*Thalurania puella* BONAPARTE, Rev. et Mag. de Zool., 1854, 254.

*T[halurania] colombica typica* HARTERT, Novit. Zool., iv, April, 1897, 149, in text (crit.).

### THALURANIA COLOMBICA VENUSTA (Gould).

#### COSTA RICAN WOOD-NYMPH.

Similar to *T. c. colombica*, but bill and tail averaging decidedly longer; adult male with color of upper parts very much darker, with the violet-blue of anterior scapulars much more extended and often crossing the upper back (sometimes as a broad band); color of tail decidedly more violaceous, and under tail-coverts with much less of white, sometimes wholly blue-black or dark steel blue; adult female with middle rectrices averaging much more bluish (usually dusky metallic blue) and under parts with sides and flanks much more



extensively metallic green, the gray confined to the median line of breast and abdomen, and even there sometimes obsolete.

*Adult male*.—Length (skins), 99–109 (102); wing, 52–55.5 (54.1); tail, 34–42.5 (39.6); culmen, 18–20.5 (19.7).<sup>a</sup>

*Adult female*.—Length (skins), 82–94 (90); wing, 47.5–52 (49.6); tail, 28–31 (29.7); culmen, 20–22.5 (20.8).<sup>b</sup>

Panamá (Volcán de Chiriquí; Chitra; Boquete de Chitra; Santiago and Santa Fé, Verágua; Divala; Calovévora; Castillo; Laguna; Paraíso?; <sup>c</sup> Lion Hill? <sup>c</sup>), Costa Rica (Angostura; Tucurríqui; Jiménez; Naranjo de Cartago; San Carlos; Bonilla; Guayabo), and Nicaragua (La Libertad, Chontales).

*Trochilus (Thaluranía) venusta* GOULD, Proc. Zool. Soc. Lond., 1850, 163 (Volcán de Chiriquí, Panamá; coll. J. Gould).

*Thaluranía venusta* GOULD, Proc. Zool. Soc. Lond., 1852, 9; Monogr. Troch., ii, 1858, pl. 105; Introd. Troch., oct. ed., 1861, 78.—BONAPARTE, Rev. et Mag. de Zool., 1854, 254.—LAWRENCE, Ann. Lyc. N. Y., vii, 1862, 292 (Lion Hill, Panamá); ix, 1868, 122 (Angostura and Tucurríqui, Costa Rica).—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1864, 365 (Panamá; crit.).—MULSANT and VERREAUX, Classif. Troch., 1866, 51; Hist. Nat. Ois.-Mouch., iii, livr. i, 1876, 65, in text.—SALVIN, Proc. Zool. Soc. Lond., 1867, 153 (Santa Fé, Santiago, and Volcán de Chiriquí, Panamá; crit.); 1870, 207 (Calovévora, Chitra, and Boquete de Chitra, Panamá); Ibis, 1872, 313, 319 (Chontales, Nicaragua).—FRANTZIUS, Journ. für Orn., 1869, 315 (Costa Rica).

[*Coeligena*. *α. Thaluranía*] *venusta* REICHENBACH, Aufz. der Colibr., 1854, 7.

*Coeligena venusta* REICHENBACH, Troch. Enum., 1855, 3.

[*Polytmus*] *venustus* GRAY, Hand-list, i, 1869, 130, no. 1657.

[*Thaluranía columbica*] var. *venusta* MULSANT, Ann. Soc. Linn. Lyon, n. s., xxii, 1876, 219.

*Thaluranía columbica* var. *venusta* BOUCARD, Proc. Zool. Soc. Lond., 1878, 69 (San Carlos and Naranjo, Costa Rica).

*Th[aluranía] columbica venusta* HARTERT, Novit. Zool., iv, April, 1897, 149, in text (crit.).

*Thaluranía columbica venusta* HARTERT, Journ. für Orn., 1900, 362 (crit.).—BANGS, Auk, xviii, 1901, 360 (Divala, Panamá; crit.); xxiv, 1907, 296 (Boruca, Baranca, and Pozo del Rio Grande, s. w. Costa Rica).—FERRY, Pub. 146, Field Mus. N. H., orn. ser., i, 1910, 263 (Guayabo, Costa Rica).

*Thaluranía columbica venusta* CARRIKER, Ann. Carnegie Mus., vi, 1910, 533 (Costa Rica; crit.; habits).

*Thaluranía columbica* (not *Ornismya columbica* Bourcier) SALVIN and ELLIOT, Ibis, 1873, 355, part (Costa Rica; Verágua).—ZELEDÓN, Cat. Aves de Costa Rica, 1882, 20; Anal. Mus. Nac. Costa Rica, i, 1887, 121, part (Naranjo de Cartago and Jiménez, Costa Rica).—SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 79, 652, part (Chontales, Nicaragua; Tucurríqui, Costa Rica; Volcán de Chiriquí, Boquete de Chitra, Castillo, Laguna, Calovévora, Santiago, Paraíso, and Lion Hill, Panamá).

*Thaluranía columbica* SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 266, part (Nicaraguan, Costa Rican, and Panaman localities and references).

<sup>a</sup> Twelve specimens.

<sup>b</sup> Thirteen specimens.

<sup>c</sup> Without specimens in hand it is impossible to say which of the two forms occurring in Panamá occur in certain localities.

## THALURANIA TOWNSENDI Ridgway.

## HONDURAS WOOD-NYMPE.

Adult male similar in color of upper parts to *T. colombica*, but under parts with breast and abdomen green instead of violet-blue or bluish violet; similar in coloration of under parts to *T. hypochlora* (of Ecuador), but forehead bluish violet or violet-blue instead of emerald green.

*Adult male*.—Forehead bright metallic violet-blue or bluish violet (royal purple); rest of pileum dull dusky metallic green, the hindneck more bronzy green, varying to bronze; upper back crossed by a band of opaque velvety black, immediately succeeded by one of bright violet-blue, this involving also the anterior scapular region; lesser wing-coverts metallic greenish blue or bluish green, the greater coverts black glossed with bluish or bluish green; lower back, rump, and upper tail-coverts metallic green (varying from slightly bluish green to bronze-green); tail dark violaceous steel blue or black glossed with violet-blue; remiges dusky slate faintly glossed with violaceous; malar region, chin, throat, and chest bright metallic yellowish emerald green; breast and abdomen similar, but less yellowish green, changing to bluish green in certain lights, the sides of breast and under wing-coverts metallic greenish blue; under tail-coverts glossy blue-black, broadly edged basally with grayish white; bill dull black; iris dark brown; feet grayish brown or dusky; length (skins), 98–107 (103); wing, 53.5–55.5 (54.3); tail, 36.5–42 (39); culmen, 19.5–20 (19.7).<sup>a</sup>

*Adult female*.—Above metallic green, more bronzy anteriorly (especially on hindneck), duller on pileum, where only tips of the feathers are metallic; middle pair of rectrices metallic bluish green, usually darker (sometimes blackish) terminally; other rectrices glossy blue-black terminally or subterminally, metallic green basally, the two outer pairs broadly tipped with pale gray or dull grayish white; remiges dusky slate, faintly glossed with violaceous; under parts, including malar region, pale brownish gray, passing on sides of neck into golden green or bronze, into metallic green or bronze-green on sides and flanks; anal region, under tail-coverts, and femoral tufts dull grayish white; bill, etc., as in adult male; length (skins), 91–94 (92); wing, 48–51.5 (49.7); tail, 27–29.5 (28.7); culmen, 20–20.5 (20.1).<sup>b</sup>

Honduras (Rio Segóvia; Yaruca) and eastern Guatemala (Gualán).

*Thaluranía townsendi* RIDGWAY, Proc. U. S. Nat. Mus., x, Aug. 6, 1888, 590 (Segóvia R., Honduras; coll. U. S. Nat. Mus.).—SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 78.—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 266.—BOUCARD, Gen. Hum. Birds, 1895, 102.—BANGS, Bull. Mus. Comp. Zool., xxxix, 1903, 144 (Yaruca, Honduras).

*T[haluranía] townsendi* HARTERT, Das Tierreich, Troch., 1900, 85 (monogr.).

[*Thaluranía*] *townsendi* SHARPE, Hand-list, ii, 1900, 115.

<sup>a</sup> Three specimens.

<sup>b</sup> Four specimens.

## THALURANIA RIDGWAYI Nelson.

## MEXICAN WOOD-NYMPH.

*Adult male*.—Forehead and crown metallic violet-blue; occiput, nape, and sides of hinder crown (superciliary region) dark metallic bluish green, appearing nearly black when viewed from in front; hindneck, back, scapulars, wing-coverts, and rump uniform metallic bronze-green, the upper tail-coverts darker; tail uniform black, faintly glossed with bluish; remiges dusky, faintly glossed with violaceous; malar and rictal regions, chin, throat, and chest bright metallic yellowish emerald green; rest of under parts dull blackish, the sides and flanks glossed with metallic bronze-green; bill black; iris dark brown; feet blackish; length (skin), 96; wing, 56; tail, 35.5; culmen, 17.<sup>a</sup>

*Adult female* unknown.

Western Mexico, in State of Jalisco (San Sabastián).

*Thaluranía ridgwayi* NELSON, Auk, xvii, no. 3, July, 1900, 262 (San Sabastián, Jalisco, s. w. Mexico; coll. U. S. Nat. Mus.).

## Genus LEPIDOPYGA Reichenbach.

*Lepidopyga* REICHENBACH, Troch. Enum., 1855, 7. (Type, *Trochilus goudoti* Bourcier.)

*Emilia* Mulsant and Verreaux, Mém. Soc. Imp. Sci. Nat. Cherb., xii (ser. 2, ii), 1866, 165, in text (Classif. Troch., 1866, 41). (Type, *Trochilus goudoti* Bourcier.)

*Arinia* (not of Adams, 1858, nor Schin [?], 1862) Mulsant, "Ann. Soc. Linn. Lyon, 1877, Oct. 12."<sup>b</sup> (Type, *A. boucardi* Mulsant.)

*Arena* (not of Fauv[er]?, 1862) Mulsant, Descr. d'une esp. nouv. de Troch., Oct. 12, 1877, 5. (Type, *A. boucardi* Mulsant.)

Rather small Trochilidæ (length about 85–95 mm.) related to *Agyrtia*, but differing in relatively much longer and distinctly forked tail, much narrower lateral rectrices, and more naked tarsi.

Bill longer than head, rather stout, terete, very faintly decurved; culmen broadly rounded, but mesorhinal portion distinctly ridged; tomia smooth; median lateral sulci of maxilla and mandible rather indistinct. Nasal operculum moderately broad, feathered for upperposterior portion or inner half (more or less). Tarsus feathered for upper half (more or less), rather slender; middle and inner toes equal in length or the former slightly the longer, outer toe slightly but distinctly shorter; hallux shorter than outer toe. Wing nearly three times as long as exposed culmen, the outer primary

<sup>a</sup> One specimen (the type).

<sup>b</sup> "Thus quoted in 'The Ibis' and 'Zool. Rec.' (1878) from a specimen copy of this paper, but not published in the work alluded to." (Salvin, Cat. Birds Brit. Mus., xvi, 1892, 193, footnote.)



longest. Tail nearly to quite two-thirds as long as wing, distinctly forked, the rectrices (except middle pair) rather narrow, with rounded tip.

*Coloration*.—Above metallic green, bronze-green, or greenish bronze, the middle rectrices sometimes blackish, the lateral rectrices always black or blackish; beneath metallic green or green with violet-blue throat and chest, the abdomen and under tail-coverts sometimes white. Adult females with under parts white, more or less greenish laterally (the throat sometimes spotted with green), the lateral rectrices tipped with pale grayish.

*Range*.—Western Costa Rica to western and central Colombia. (Four species.)

KEY TO THE SPECIES OF LEPIDOPYGA.

- a. Under parts mostly metallic green or violet-blue. (*Adult males*.)
  - b. Throat and chest violet-blue. (Panamá and southwestern Costa Rica.)  
*Lepidopyga cæruleogularis*, adult male (p. 539).
  - bb. Throat and chest green.
    - c. Abdomen metallic green; under tail-coverts green medially.
      - d. Under tail-coverts metallic green margined with white; feathers of throat and chest with subterminal (concealed) bar gray. (Northeastern Colombia.).....*Lepidopyga cœlina*, adult male (extralimital).<sup>a</sup>
      - dd. Under tail-coverts white with a mesial streak of green; feathers of throat and chest with subterminal (concealed) bar white. (Central and northern Colombia.).....*Lepidopyga goudoti*, adult male (extralimital).<sup>b</sup>
    - cc. Abdomen and under tail-coverts immaculate white. (Pacific coast of Costa Rica.).....*Lepidopyga boucardi*, adult male (p. 541).
- aa. Under parts mostly white.
  - b. Chin, throat, and chest white or mostly white.

<sup>a</sup> *Thalurania cœlina* Bourcier, Rev. et Mag. de Zool., 1853, 553 (Santa Marta, Colombia).—*Lepidopyga cœlina* Simon, Rev. Franç. d'Orn., nos. 5, 6, Sept.-Oct., 1909, 66 (crit.).—*Sapphironia luminosa* Lawrence, Ann. Lyc. N. H. N. Y., vii, 1862, 458 (Barranquilla, Colombia; coll. G. N. Lawrence?).—*L[epidopyga] luminosa* Heine, Journ. für Orn., 1863, 194 (crit.); Hartert, Das Tierreich, Troch., 1900, 50 (monogr.).—*Cyanophaia luminosa* Elliot, Classif. and Synop. Troch., 1879, 235; Salvin, Cat. Birds Brit. Mus., xvi, 1892, 235.—*[Emilia] luminosa* Mulsant, Ann. Soc. Linn. Lyon, n. s., xxii, 1876, 208.—*L[epidopyga] (Cyanophaia) luminosa* Simon, Rev. Franç. d'Orn., nos. 5, 6, Sept., Oct., 1909, 66, in text (crit.).

<sup>b</sup> *T[rochilus] goudoti* Bourcier, Rev. Zool., vi, April, 1843, 100 (Ibagué, Colombia); Bourcier and Mulsant, Ann. Sci. Phys. et Nat., etc., Lyon, vi, 1843, 47.—*[Saucerottia] goudoti* Bonaparte, Consp. Av., i, 1850, 77.—*[Agyrtria. δ. Chalybura] goudoti* Reichenbach, Aufz. der Colibr., 1854, 10.—*Hylocharis goudoti* Bonaparte, Rev. Zool., 1854, 255.—*[Agyrtria] goudotii* Reichenbach, Troch. Enum., 1855, 7, pl. 763, figs. 4765, 4766.—*Sapphironia goudoti* Gould, Mon. Troch., pt. v, 1860, pl. 345; Introd. Troch., oct. ed., 1861, 172.—*L[epidopyga] goudoti* Cabanis and Heine, Mus. Hein., iii, 1860, 40, footnote.—*Chrysolampis (Emilia) goudoti* Mulsant and Verreaux, Classif. Troch., 1866, 41.—*Emilia goudoti* Mulsant and Verreaux, Hist. Nat. Ois.-Mouch., ii, 1875, 64.—*[Polytmus] goudoti* Gray, Hand-list, i, 1869, 131, no. 1673.—*Cyanophaia goudoti* Elliot, Classif. and Synop. Troch., 1879, 239; Salvin, Cat. Birds Brit. Mus., xvi, 1892, 234.—*L[epidopyga] goudoti* Hartert, Das Tierreich, Troch., 1900, 50.

- c. Flanks mostly metallic green or bronze-green; lateral rectrices broadly tipped with pale gray and with basal portion bluish black.

*Lepidopyga cæruleogularis*, adult female (p. 539).

- cc. Flanks mostly white; lateral rectrices narrowly tipped with pale gray and with basal portion extensively bronze or bronze-green.

*Lepidopyga boucardi*, adult female (p. 541).

- bb. Chin, throat, and chest mostly green.

- c. Green of chest strongly bluish.

*Lepidopyga cœlina*, adult female (extralimital).

- cc. Green of chest not strongly bluish.

*Lepidopyga goudoti*, adult female (extralimital).

### LEPIDOPYGA CÆRULEOGULARIS (Gould).

#### DUCHASSAIN'S HUMMING BIRD.

*Adult male*.—Above rather bright metallic green or bronze-green, the upper tail-coverts with basal portion usually more decidedly bronzy; middle pair of rectrices varying from bronze-green to bronze, sometimes darker (rarely blackish) terminally; rest of tail dull blue-black or black glossed with bluish; remiges dark brownish slate or dusky, faintly glossed with violaceous; chin, throat, and chest bright metallic violet-blue, more decidedly violaceous centrally, less so (sometimes greenish blue) exteriorly; breast, sides, flanks, and abdomen metallic green or bluish green; under tail-coverts bright metallic green or bronze-green, broadly margined with white or grayish white; femoral tufts white; maxilla dull black, mandible pale brownish or dull whitish (pink or reddish in life) with terminal portion dusky; iris dark brown; feet dusky; length (skins), 84–97 (90); wing, 46.5–52 (49.8); tail, 27–34 (31.8); culmen, 16–19 (17.8).<sup>a</sup>

*Adult female*.—Above metallic bronze-green, the middle pair of rectrices more bronzy, darker terminally; other rectrices black, faintly glossed with bluish, and broadly tipped with grayish white, this more or less clouded with gray, especially on outer web; remiges brownish slate or dusky, faintly glossed with violaceous; malar region, chin, throat, median portion of chest and breast, abdomen, flanks, anal region, and under tail-coverts plain white, faintly tinged with pale grayish; sides of chest and breast and anterior portion of sides metallic green; bill, etc., as in adult male; length (skin), 89.5; wing, 48; tail, 30; culmen, 20.<sup>b</sup>

Panamá (near David; Calobre; Castillo; Laguna del Castillo; Cordillera del Chucu; Santa Fé de Verágua; Panamá; Punta de Sabana, near Panamá; Lion Hill; Paraiso; Colón; Natá, Coclé) and northern Colombia (Cartagena; Cienega).

*Trochilus* (————?) *cæruleogularis* GOULD, Proc. Zool. Soc. Lond., 1850, 163 (David, Chiriquí, Panamá; coll. J. Gould).

<sup>a</sup> Nine specimens.

<sup>b</sup> One specimen.

- [*Agyrtria*.  $\delta$ . *Cyanochloris*] *coeruleigularis* REICHENBACH, Aufz. der Colibr., 1854, 10.  
 [*Sapphironia*] *coeruleigularis* BONAPARTE, Rev. et Mag. de Zool., 1854, 256.  
*Sapphironia caeruleogularis* LAWRENCE, Ann. Lyc. N. Y., vii, 1862, 319 (Lion Hill, Panamá).—WYATT, Ibis, 1871, 378 (Cienega, n. Colombia).—SALVIN, Proc. Zool. Soc. Lond., 1883, 425 (Colón, Panamá).  
*Sapphironia caeruleigularis* SCLATER, Proc. Zool. Soc. Lond., 1856, 140 (David, Panamá).—GOULD, Mon. Troch., v, 1860, pl. 346; Introd. Troch., oct. ed., 1861, 172.—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1864, 365 (Lion Hill).—SALVIN, Proc. Zool. Soc. Lond., 1867, 156 (Santa Fé de Veragua, David, and Chiriquí, Panamá); 1870, 211 (Laguna del Castillo, Castillo, Cordillera del Chucu, and Calobre, Panamá).—FRANTZIUS, Journ. für Orn., 1869, 317 (Costa Rica).  
 [*Sapphironia*] *caeruleigularis* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 94.  
 [*Agyrtria*] *coeruleigularis* REICHENBACH, Troch. Enum., 1855, 7, pl. 764, figs. 4768–4770.  
*Lepidopyga caeruleigularis* CABANIS and HEINE, Mus. Hein., iii, 1860, 40 (Veragua).  
 [*Lepidopyga*] *caeruleigularis* SHARPE, Hand-list, ii, 1900, 106.  
*Lepidopyga caeruleogularis* MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., ii, livr. 1, 1875, 68.  
 [*Lepidopyga*] *caeruleogularis* MULSANT, Ann. Soc. Linn. Lyon, xxii, 1876, 208.  
*Lepidopyga caeruleogularis* MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., iv, livr. 3, 1878, 197 (synon.).  
 [*Lepidopyga*] *caeruleigularis* HEINE and REICHENOW, Nom. Mus. Hein. Orn., 1890, 180 (Veragua).—SIMON, Cat. Troch., 1897, 12.  
*Lepidopyga coeruleigularis* BERLEPSCH, Journ. für Orn., 1887, 336 (Cartagena, Colombia).  
*Lepidopyga caeruleogularis* HARTERT, Das Tierreich, Troch., 1900, 50 (monogr.).  
*Lepidopyga* (*Cyanophaia*) *caeruleigularis* SIMON, Rev. Franç. d'Orn., nos. 5–6, Sept.–Oct., 1909, 66, in text (crit.).  
*Hylocharis caeruleigularis* MULSANT and VERREAUX, Classif. Troch., 1866, 38.  
 [*Polytmus*] *caeruleogularis* GRAY, Hand-list, i, 1869, 131, no. 1674.  
*Cyanophaia caeruleigularis* ELLIOT, Classif. and Synop. Troch., 1879, 238.—ZELEDÓN, Cat. Aves de Costa Rica, 1882, 21; Anal. Mus. Nac. Costa Rica, i, 1887, 122.—SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 233 (Costa Rica; Paraiso, Colón, etc., Panamá).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 307.—BOUCARD, The Hum. Bird, ii, 1892, 80 (“Bogotá”); Gen. Hum. Birds, 1895, 134 (Veragua; Panamá; Colon).—SALVADORI and FESTA, Boll. Mus. Zool., etc., Torino, xiv, 1899, no. 339, 7 (Punta de Sabana, Panamá; crit.).  
*Tr[ochilus] duchassaini* BOURCIER, Compt. Rend., xxxii, 1851, 187 (“les bois entre la Gorgone et Panama”).<sup>a</sup>  
 [*Hylocharis*.  $\beta$ . *Cyanophaia*] *duchassainii* REICHENBACH, Aufz. der Colibr., 1854, 10.  
 [*Hylocharis*] *duchassainii* REICHENBACH, Troch. Enum., 1855, 8.  
 [*Sapphironia*] *duchassaingi* BONAPARTE, Rev. et Mag. de Zool., 1854, 256.  
 [*Hylocharis*]  $\beta$ . *Cyanophaia caeruleus* REICHENBACH, Aufz. der Colibr., 1854, 10.  
 [*Hylocharis*] *coeruleus* REICHENBACH, Troch. Enum., 1855, 8, pl. 770, fig. 4785.

<sup>a</sup> Type now in coll. Am. Mus. Nat. Hist., New York City.



## LEPIDOPYGA BOUCARDI (Mulsant).

## BOUCARD'S HUMMING BIRD.

*Adult male*.—Above metallic bronze-green, passing into a more decided bronze hue on upper tail-coverts and middle rectrices; rectrices (except middle pair) bronze or greenish bronze basally and dull blackish or dusky terminally, the dusky decreasing in extent from the outermost rectrix, on which it occupies approximately the terminal half, to the fourth, on which it is confined to the tip; remiges dusky or dull brownish slate, very faintly glossed with bluish, the primary coverts similar but slightly darker and sometimes faintly glossed with green terminally; chin, throat, and chest brilliant metallic emerald green, the feathers pure white beneath surface, this more or less exposed, especially on upper throat; sides more bronzy green, the feathers grayish white or pale gray basally; rest of under parts white, the breast, at least laterally, more or less spotted with metallic green; maxilla dull black; mandible pale (flesh colored in life), dusky terminally; iris dark brown; legs and feet dusky; length (skins), 93–99 (95); wing, 52–55 (53.9); tail, 31–35 (32.4); culmen, 19–19.5 (19.3).<sup>a</sup>

*Adult female*.—Similar to the adult male, but chin, throat, and chest white, the throat usually sparsely spotted with dull metallic emerald green; under parts of body more extensively white; lateral rectrices extensively but indistinctly tipped with pale brownish gray; length (skins), 90–96 (94); wing, 50.5–55 (52.8); tail, 30–32.5 (31.6); culmen, 19–21.5 (20.1).<sup>a</sup>

Pacific coast of Costa Rica (Punta Arenas; Pigres; Coronada de Térraba; Palo Verde, Guanacaste).

*Arena boucardi* Mulsant, Descr. espèce nouv. Troch. [présentée Soc. Linn. Lyon, Oct. 12, 1877], 6 (Punta Arenas, Costa Rica; coll. Paris Mus.).—Mulsant and Verreaux, Hist. Nat. Ois.-Mouch., iv, livr. 3, 1878, 194, pl. 121.

*Arinia boucardi* Mulsant and Verreaux, Hist. Nat. Ois.-Mouch., Suppl. plates, pl. 18.—Elliot, Classif. and Synop. Troch., 1879, 209.—Salvin, Cat. Birds Brit. Mus., xvi, 1892, 193.—Salvin and Godman, Biol. Centr.-Am., Aves, ii, 1892, 286.—Boucard, Gen. Hum. Birds, 1895, 136.—Zeledón, Cat. Aves de Costa Rica, 1882, 21; Anal. Mus. Nac. Costa Rica, i, 1887, 122.—Ridgway, Condor, vii, 1905, 154, in text (Pigres, Costa Rica).

*Sapphirionia boucardi* Boucard, Proc. Zool. Soc. Lond., 1878, 71 (Punta Arenas).

[*Polyerata*] *boucardi* Simon, Cat. Troch., 1897, 12.

[*Agyrtia*] *boucardi* Hartert, Das Tierreich, Troch., 1900, 47 (monogr.).

[*Agyrtia*] *boucardi* Sharpe, Hand-list, ii, 1900, 105.

*Agyrtia boucardi* Carraker, Ann. Carnegie Mus., vi, 1910, 524 (Palo Verde, Guanacaste, and El Corona de Térraba, Costa Rica; habits).

<sup>a</sup> Ten specimens.

Genus *RICCORDIA* Reichenbach.

[*Chlorestes*.] *δ. Riccordia* REICHENBACH, Aufz. der Colib., March?, 1854, 8. (Type, *Riccordia ramondii* Reichenbach = *Trochilus ricordii* Gervais.)

*Riccordia* (emendation) SIMON, Cat. Troch., 1897, 18.

*Sporadinus* BONAPARTE, Rev. et Mag. de Zool., vi, May, 1854, 255. (Type, as fixed by Gray, 1855, *Trochilus ricordii* Gervais.)

*Sporadicus* (emendation, on grounds of purism) CABANIS and HEINE, Mus. Hein., iii, March, 1860, 25.

Small Trochilidæ (length about 95–105 mm.) resembling the longer tailed species of *Chlorostilbon*, but with lateral rectrices relatively much wider.

Bill about as long as head, straight, slightly depressed; culmen broadly rounded, but basally contracted into a more or less distinct narrow ridge; tomia smooth; mandible with a distinct median lateral groove, the maxilla with a faint indication of a similar one. Nasal operculum broad and convex posteriorly, feathered on upper posterior portion, the frontal feathering forming two obtuse antiæ which extend about as far as middle of nasal operculum. Tarsus clothed with short feathers; lateral toes about equal, slightly shorter than middle toe, the hallux shorter than lateral toes. Wing more than three times as long as exposed culmen (slightly less in females), the outer primary longest. Tail nearly as long as wing in adult males, about three-fourths as long in females, deeply forked, the lateral rectrices broad, all rounded at tip.

*Coloration*.—Above metallic green or bronze-green; adult males with under parts bright metallic green (one species with a velvety black jugular spot), the tail black with middle rectrices more or less bronzy; adult females with under parts brownish gray, the tail much as in adult males.

*Range*.—Bahama Islands, Cuba, and Haiti. (Two species.)

This genus is very close to *Chlorostilbon*, and differs mainly, if not solely, in the relatively broader lateral rectrices, the form of the tail being very similar to that of some species of *Thalurania*. As stated under *Chlorostilbon*, it has been found necessary to transfer from this genus to the latter *R. maugæi*, of Porto Rico, in order that it may be possible to characterize the two groups.

KEY TO THE SPECIES AND SUBSPECIES OF *RICCORDIA*.

- a. Under parts mostly metallic green. (*Adult males*.)
  - b. No black on under parts. (*Riccordia ricordii*.)
    - c. Tail averaging longer and relatively more deeply forked (average length 43.9, average depth of fork 23.2); rectrices less distinctly bronzy. (Cuba, including Isle of Pines.).....*Riccordia ricordii ricordii*, adult male (p. 543).
    - cc. Tail averaging shorter and relatively less deeply forked (average length 41.6, average depth of fork 19); rectrices more distinctly bronzy. (Bahamas.)  
*Riccordia ricordii æneoviridis*, adult male (p. 544).
  - bb. A velvety black spot on center of chest and breast. (Haiti.)  
*Riccordia swainsonii*, adult male (p. 546).

aa. Under parts mostly gray. (*Adult females.*)

b. Lateral rectrices blackish to extreme base; gray of under parts paler; under tail-coverts white. (*Riccordia ricordii.*)

c. Tail averaging 38.5, average depth of fork 15.8.

*Riccordia ricordii ricordii*, adult female (p. 543).

cc. Tail averaging 36.9, average depth of fork 12.8.

*Riccordia ricordii æneoviridis*, adult female (p. 545).

bb. Lateral rectrices with basal half or more bronzy; gray of under parts darker; under tail-coverts brownish gray.

*Riccordia swainsonii*, adult female (p. 546).

## RICCORDIA RICORDII RICORDII (Gervais).

### RICORD'S EMERALD.

*Adult male*.—Above rather dark metallic bronze-green, darker and decidedly duller on pileum; four middle rectrices dark metallic bronze or greenish bronze, the next pair similar but with inner webs greenish black; two outer pairs of rectrices greenish black, or black faintly glossed with bluish green or greenish blue, the outer web of next to outer pair slightly bronzed; remiges dark brownish slate or dusky, faintly glossed with violaceous; under parts brilliant metallic green (yellowish emerald green); femoral tufts and under tail-coverts white, the latter sometimes with a few small spots or streaks of grayish on lateral feathers; maxilla dull black; mandible brownish (pinkish or reddish in life?), with tip dusky; iris dark brown; feet dusky; length (skins), 97–105 (100); wing, 50–55 (52.3); tail, 36–47.5 (43.4); middle rectrices, 18.5–22 (20.4); culmen, 14.5–18.5 (17.1).<sup>a</sup>

*Adult female*.—Above similar in color to adult male; beneath brownish gray (between drab-gray and smoke gray), the sides, from neck to flanks inclusive, metallic green, with feathers gray beneath surface; anal tufts white; a grayish white postocular spot; bill, etc., as in adult male; length (skins), 92–101 (96); wing, 48–52.5 (50.7); tail, 36–42.5 (38.5); middle rectrices, 21–24.5 (22.7); culmen, 17.5–19 (18.1).<sup>b</sup>

<sup>a</sup> Thirteen specimens.

<sup>b</sup> Twelve specimens.

| Locality.                                                         | Wing. | Lateral<br>rec-<br>trices. | Middle<br>rec-<br>trices. | Ex-<br>posed<br>culmen. |
|-------------------------------------------------------------------|-------|----------------------------|---------------------------|-------------------------|
| MALES.                                                            |       |                            |                           |                         |
| Ten adult males from eastern Cuba.....                            | 52.6  | 43.2                       | 20.4                      | 17.2                    |
| One adult male from western Cuba.....                             | 52    | 44                         | 22.5                      | 18                      |
| Two adult males from Isle of Pines.....                           | 51    | 44.5                       | 19.2                      | 16.2                    |
| Fifteen adult males of <i>R. r. æneoviridis</i> from Bahamas..... | 52.8  | 41.6                       | 22.6                      | 17.4                    |
| FEMALES.                                                          |       |                            |                           |                         |
| Two adult females from eastern Cuba.....                          | 49.5  | 39.5                       | 21.5                      | 17.5                    |
| Eight adult females from western Cuba.....                        | 50.9  | 38.6                       | 22.8                      | 18.1                    |
| Two adult females from Isle of Pines.....                         | 51.5  | 37.2                       | 23.2                      | 18.2                    |
| Nine adult females of <i>R. r. æneoviridis</i> from Bahamas.....  | 51.8  | 36.9                       | 24.4                      | 18.4                    |



Island of Cuba (Santiago de Cuba; Figuabas; Palmarito; Pinár del Rio; Monte Verde; El Guamá; Cabañas; Trinidad; Holquín; San Diego de los Baños; Batabano; Matanzas; San Cristóbal; near Havana); Isle of Pines (Almacigos; Santa Fé).

*O[rnismya] ricordii* GERVAIS, Mag. de Zool., 1835, cl. ii, pls. 41, 42 (Santiago, Cuba).

*Trochilus ricordii* GERVAIS, Mag. de Zool., 1835, errata.

*Trochilus ricordi* BONAPARTE, Consp. Av., i, 1850, 81.

*Orthorhynchus ricordi* D'ORBIGNY, in La Sagra's Hist. Nat. Cuba, iii, 1839, 100, pl. 21, fig. 2.

*H[ylocharis] ricordi* GRAY, Gen. Birds, i, Dec., 1848, 114.

*[Hyllocharis] ricordi* GRAY, Hand-list, i, 1869, 150, no. 1942.

*Sporadinus ricordi* GOULD, Mon. Troch., v, pt. xx, 1860, pl. 348; Introd. Troch., oct. ed., 1861, 173.—ELLIOT, Ibis, 1872, 356 (Cuba).—MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., ii, livr. 1, 1875, 74 (Cuba); iv, livr. 3, 1878, 197.—SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 57, part (San Cristóbal, Cuba; "part of Florida").—CHAPMAN, Bull. Am. Mus. N. H., iv, 1892, 302 (near Trinidad, s. Cuba; descr. nest and eggs).—GUNDLACH, Orn. Cub. ed. 1895, 130.—BOUCARD, Gen. Hum. Birds, 1895, 116, part (Cuba).

*[Sporadinus] ricordi* BONAPARTE, Rev. et Mag. de Zool., 1854, 255.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 94, part (Cuba).—MULSANT, Ann. Soc. Linn. Lyon, xxii, 1876, 209.

*Sporadinus riccordi* ELLIOT, Classif. and Synop. Troch., 1879, 241, part (Cuba).—CORY, Auk, iii, 1886, 358, part (Cuba); Birds West Ind., 1889, 153, part (Cuba); Cat. West Ind. Birds, 1892, 57, part (Cuba).

*[Sporadinus] riccordi* CORY, List Birds West Ind., 1885, 18, part (Cuba).

*S[poradicus] ricordi* CABANIS and HEINE, Mus. Hein., iii, 1860, 25, footnote.

*Chlorolampis ricordi* MULSANT and VERREAUX, Classif. Troch., 1866, 40.

*Chlorestes ricordii* CABANIS, Journ. für Orn., 1856, 99 (Cuba; habits).—GUNDLACH, Journ. für Orn., 1874, 142 (Cuba; habits); Repert. Fisico-Nat. Cuba, i, 1866, 291; Orn. Cub., ed. 1895, 108, 272.—BREWER, Proc. Bost. Soc. N. H., vii, 1860, 306.

*[Chlorestes] ricordii* GUNDLACH, Journ. für Orn., 1861, 334 (Cuba).

*R[icordia] ricordi* HARTERT, Das Tierreich, Troch., 1900, 81, part (Cuba; monogr.).

*[Ricordia] ricordi* SIMON, Cat. Troch., 1897, 19.—SHARPE, Hand-list, ii, 1900, 114, part (Cuba).

*Ricordia ricordi* MENEGAUX, Rev. Franç. d'Orn., no. 2, 1909, 25 (Figuabas, e. Cuba).

*Ricordia ricordii* BANGS and ZAPPEY, Am. Nat., xxxix, April, 1905, 203 (Isle of Pines, Cuba).

*O[rnismya] parzudhaki* LESSON, Rev. Zool., 1838, 315 ("Cuba, circà Havanam").

*[Chlorestes] δ. Riccordia ramondii* REICHENBACH, Aufz. der Colibr., 1854, 8.

*[Chlorestes] raimondii* REICHENBACH, Troch. Enum., 1855, 4, pl. 704, figs. 4584-4586.

#### RICCORDIA RICORDII ÆNEOVIRIDIS <sup>a</sup> (Palmer and Riley).

##### BAHAMAN EMERALD.

Similar to *R. r. ricordii*, but tail averaging shorter and relatively less deeply forked, and more bronzy, especially on lateral rectrices.

<sup>a</sup> In case *Sporadinus bracci* Lawrence should prove not different from the ordinary Bahaman bird, the name of this form would then be *Riccordia ricordii bracci*.

*Adult male*.—Length (skins), 95–106 (102); wing, 49–54.5 (52.8); tail, 38–44 (41.6); middle rectrices, 20–25 (22.6); culmen, 17–19 (17.4).<sup>a</sup>

*Adult female*.—Length (skins), 91–104 (99); wing, 49–54 (51.8); tail, 34–38 (36.9); middle rectrices, 23–25.5 (24.4); culmen, 17–19.5 (18.4).<sup>b</sup>

Bahama Islands (Abaco; Little Abaco; Great Bahama; Elbow Cay; Andros; New Providence?)

(?) *Sporadinus bracci* LAWRENCE, Ann. N. Y. Acad. Sci., i, Dec., 1877, 50 (New Providence, Bahamas; coll. U. S. Nat. Mus.).—ELLIOT, Classif. and Synop. Troch., 1879, 240, footnote.—CORY, Birds Bahama I., 1880, 113.

[*Sporadinus*] *ricordi* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 94, part (Abaco I., Bahamas).

*Sporadinus ricordi* CORY, Birds Bahama Is., 1880, 11 (Andros; Long Bay Cay); Auk, viii, 1891, 298 (Abaco), 350 (Great Bahama; Abaco).—RIDGWAY, Auk, viii, 1891, 334 (Abaco).—NORTHROP, Auk, viii, 1891, 74 (Andros). SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 57, part (in synonymy).

[*Sporadinus*] *riccordi* (not *Ornismya riccordii* Gervais) CORY, List Birds West Ind. 1885, 18, part (Bahamas).

*Sporadinus riccordi* ELLIOT, Classif. and Synop. Troch., 1879, 241, part (Abaco, Bahamas).—CORY, Auk, iii, 1886, 259, part; Birds West Ind., 1889, 153, part; Cat. West Ind. Birds, 1892, 13, part.—BONHOTE, Ibis, 1903, 293 (Andros and Little Abaco islands, Bahamas; crit.).

*Sporadinus riccordii* CORY, Cat. West Ind. Birds, 1892, 107, 144, part (Bahamas).

*R[icordia] ricordi* HARTERT, Das Tierreich, Troch., 1900, 81, part (Bahamas; monogr.).

[*Ricordia*] *ricordi* SHARPE, Hand-list, ii, 1900, 114, part (Bahamas).

*Riccordia æneoviridis* PALMER and RILEY, Proc. Biol. Soc. Wash., xv, March 5, 1902, 34 (Abaco, Bahamas; coll. U. S. Nat. Mus.).—ALLEN (G. M.), Auk, xxii, 1905, 127 (Great Abaco; Little Abaco; Great Bahama; and "all the outer cays" with bushes).

*Riccordia riccordii æneoviridis* RILEY, Auk, xxii, 1905, 356 (Abaco; crit.).

<sup>a</sup> Fifteen specimens.

<sup>b</sup> Nine specimens.

| Locality.                                      | Wing. | Tail. | Middle<br>rec-<br>trices. | Cul-<br>men. |
|------------------------------------------------|-------|-------|---------------------------|--------------|
| MALES.                                         |       |       |                           |              |
| Ten adult males from Abaco island .....        | 53    | 42.1  | 22.7                      | 17.3         |
| Two adult males from Great Bahama island ..... | 53    | 42    | 25                        | 17.2         |
| Two adult males from Andros island .....       | 51.5  | 38.5  | 21                        | 17.5         |
| FEMALES.                                       |       |       |                           |              |
| Six adult females from Abaco .....             | 52.7  | 37.5  | 25                        | 18.8         |
| One adult female from Little Abaco .....       | 52.5  | 37    | 24.5                      | 18           |
| Two adult females from Andros .....            | 49    | 35.2  | 23                        | 17.2         |

## RICCORDIA SWAINSONII (Lesson).

## HAITIAN EMERALD.

*Adult male*.—Above metallic bronze-green to grass-green, usually duller on pileum, the upper tail-coverts decidedly more bronzy; tail dark greenish bronze, becoming darker (dull blackish) on lateral rectrices; remiges dusky, faintly glossed with purplish; chin, throat, and sides of chest brilliant metallic emerald green or yellowish green; center of chest and upper breast opaque velvety black; rest of under parts metallic green or bronze-green, darker (sometimes blackish) along median line, especially on abdomen; femoral and lumbar tufts pale brownish gray; maxilla dull black; mandible pale (reddish or flesh color in life), dusky terminally; iris dark brown; feet dusky (in dried skins); length (skins), 102–110 (106); wing, 54.5–58 (55.7); tail, 41–49 (43.6); culmen, 16–18 (16.9).<sup>a</sup>

*Adult female*.—Above as in the adult male, but lateral rectrices bronze or bronze-green for basal two-thirds (approximately) the subterminal or terminal portion black, the one or two outermost pairs tipped (more or less broadly) with brownish gray; under parts light brownish gray (nearest drab-gray), the sides and flanks overlaid by metallic green or bronze-green; length (skins), 97–105 (100); wing, 49–55 (53.2); tail, 35–39.5 (37.5); culmen, 17–19 (18.1).<sup>b</sup>

Island of Haiti (Le Coup and Gautier, Haiti; Samaná, Catara, Aguacate, El Valle, La Canita, Sanchez, and La Vega, Santo Domingo).

*Trochilus elegans* (not of Reich, 1795) AUDEBERT and VIEILLOT, Ois. Dorés, i, 1801, 32, pl. 14.—VIEILLOT, Nouv. Dict. d'Hist. Nat., vii, 1817, 351.—LESSON, Suppl. Ois.-Mouch., 1830–31, 99.—BRYANT, Proc. Bost. Soc. N. H., xi, 1867, 95 (Santo Domingo).

*T[rochilus] elegans* VIEILLOT, Tabl. Enc. Méth., ii, 1822, 556.

*H[ylocharis] elegans* GRAY, Gen. Birds, i, Dec., 1848, 114.

*[Hylocharis] elegans* GRAY, Hand-list, i, 1869, 150, no. 1943.

*[Lampornis] elegans* BONAPARTE, Consp. Av., i, 1850, 72.

*[Chlorestes. δ. Riccordia] elegans* REICHENBACH, Aufz. der Colibr., 1854, 8.

*[Chlorestes] elegans* REICHENBACH, Troch. Enum., 1855, 4, pl. 704, fig. 4587.

*[Sporadinus] elegans* BONAPARTE, Rev. et Mag. de Zool., 1854, 255.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 94.—MULSANT, Ann. Soc. Linn. Lyon, xxii, 1876, 209 (Haiti).—CORY, List Birds West Ind., 1885, 18.

*Sporadinus elegans* SALLÉ, Proc. Zool. Soc. Lond., 1857, 233 (Santo Domingo).—GOULD, Mon. Troch., pt. xviii, 1859; vol. v, 1861, pl. 347; Introd. Troch., oct. ed., 1861, 173.—ELLIOT, Classif. and Synop. Troch., 1879, 241.—MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., ii, livr. 1, 1875, 72 (Santo Domingo); iv, livr. 3, 1878, 197.—CORY, Bull. Nutt. Orn. Club, vi, 1881, 153 (Gautier and Le Coup, Haiti); Birds Haiti and St. Dom., 1885, 93, pl. 22, figs. 9, 10; Auk, iii, 1886, 358 (descr.; synon.); Birds West Ind., 1889, 152; Cat. West Ind. Birds, 1892, 13, 107, 131.—SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 59 (Samaná, Santo Domingo).—BOUCARD, Gen. Hum. Birds, 1895, 117.—CHERRIE, Contr. Orn. San Dom., 1896, 18 (habits).—CHRISTY, Ibis, 1897, 329 (Sanchez and La Vega, Santo Domingo).

<sup>a</sup> Ten specimens.

<sup>b</sup> Four specimens.



- S[poradicus] elegans* CABANIS and HEINE, Mus. Hein., iii, 1860, 25 (Haiti).  
*[Sporadicus] elegans* HEINE and REICHENOW, Nom. Mus. Hein. Orn., 1890, 176.  
*Chlorolampis elegans* MULSANT and VERREAUX, Classif. Troch., 1866, 40.  
*R[icordia] elegans* HARTERT, Das Tierreich, Troch., 1900, 80.  
*[Ricordia] elegans* SIMON, Cat. Troch., 1897, 19.—SHARPE, Hand-list, ii, 1900, 114.  
*Ornismya swainsonii* LESSON, Hist. Nat. Ois.-Mouch., 1829, pp. xvii, Tableau, p. xvii (p. 197, pl. 70) ("Brésil;" new name for *Trochilus elegans* Audebert and Vieillot).  
*Trochilus swainsonii* LESSON, Index Gen. et Synop. Troch., 1832, p. xxiii.  
*Sporadinus incertus* MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., ii, livr. 1, 1875, 76 (new name for "*Erythronota? elegans* Gould;" but see Boucard, The Hum. Bird, iv, 1894, 118!).  
*[Sporadinus] incertus* MULSANT, Ann. Soc. Linn. Lyon, n. s., xxii, 1876, 209.

### Genus CHLOROSTILBON Gould.

- Chlorostilbon* <sup>a</sup> GOULD, Mon. Troch., pt. v, May, 1853, sub. pl. 355; Introd. Troch., oct. ed., 1861, 175. (Type, *Ornismya prasina* Lesson.)<sup>b</sup>  
*Chlorolampis* <sup>c</sup> CABANIS and HEINE, Mus. Hein., iii, March, 1860, 47. (Type, *Trochilus chrysogaster* Bourcier=*T. angustipennis* Fraser.)  
*Prasitis* <sup>d</sup> CABANIS and HEINE, Mus. Hein., iii, March, 1860, 49. (Type, *Ornismya prasina* Lesson.)  
*Chloauges* HEINE, Journ. für Orn., xi, May, 1863, 200. (Type, *Trochilus auriceps* Gould.)  
*Merion* MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., ii, 1875, 92. (Type, *Chlorestes haerberlini* Reichenbach.)  
*Marsyas* MULSANT, Ann. Soc. Linn. Lyon, n. s., xxii, 1876, 209. (Type, *Trochilus maugæus* Vieillot.)  
*Chrysomirus* MULSANT, Ann. Soc. Linn. Lyon, n. s., xxii, 1876, 209. (Type, as fixed by Elliot, 1879, *Trochilus angustipennis* Fraser.)  
 (?) *Panychlora* <sup>e</sup> CABANIS and HEINE, Mus. Hein., iii, March, 1860, 49. (Type, *Smaragdites euchloris* Reichenbach.)

Small Trochilidæ (length about 70–100 mm.<sup>f</sup>) with straight, narrow bill about as long as head, tail more or less forked or emarginate (rarely nearly truncate or slightly double-rounded in female), with lateral rectrices decidedly narrower than middle pair, the adult males with under parts wholly brilliant metallic green and tail (except in species of "*Panychlora*" group) blue-black, the middle rectrices sometimes tipped with gray; adult females gray beneath, lateral rectrices green or grayish basally, blue-black terminally or subterminally, the outermost (at least) tipped with pale gray.

Bill slender, straight, nearly terete, about as long as head; culmen broadly rounded but basally contracted into a more or less distinct

<sup>a</sup> "*Χλωρός*, viridis, et *στίλβω*, corusco." (Gould.)

<sup>b</sup> See Introduc. Troch., 1861, 175.

<sup>c</sup> "*Von χλωρός* (grün) und *λάμπω* (leuchten, glänzen)." (Cabanis and Heine.)

<sup>d</sup> "*Von πρασιτίς* (dem Lauch an Farbe ähnlich)." (Cabanis and Heine.)

<sup>e</sup> "*Von πᾶνω* (gar sehr) und *χλωρός* (grün)." (Cabanis and Heine.)

<sup>f</sup> The variation in length is caused by varying length of the tail, which in some species equals nearly half the total length.

ridge; tomtia smooth; maxilla and mandible (especially the latter) each with a more or less distinct median lateral groove. Nasal operculum broad and convex posteriorly, the upper basal portion feathered; frontal feathering forming two narrow antia, extending nearly (sometimes quite) as far forward as anterior end of nasal operculum. Tarsus clothed with short feathers; lateral toes about as long as middle toe, the hallux shorter. Wing three to nearly four times as long as culmen, the outer primary longest. Tail less than half as long as wing to nearly as long as wing in adult males of some species, emarginate or forked in adult males, forked, emarginate, or slightly double-rounded in females, the rectrices straight, the outer ones narrower than middle pair, sometimes much narrower, but always with rounded tip.

*Coloration*.—Above metallic green or bronze-green. Adult males brilliant metallic green below, the tail blue-black, green, bronze, or copper-bronze, sometimes with middle rectrices tipped with gray. Females with under parts pale gray or grayish white, middle rectrices greenish (usually blackish terminally or subterminally), the lateral rectrices greenish or gray basally, black terminally or subterminally, the outermost tipped with pale grayish.

*Range*.—Southern Mexico to Cayenne, Paraguay, northern Argentina, Bolivia, and Peru; one species in Porto Rico. (About twenty-one species, including subspecies.)

For the present, I follow von Berlepsch and Hartert in uniting *Panychlora* Cabanis and Heine with this genus. *Panychlora* seems at first examination to be a very well circumscribed group, the males of all the species having brightly metallic (never blue-black) rectrices, and the tail relatively shorter than in most species of *Chlorostilbon* (not more than half as long as wing); but *C. prasinus* has the tail even shorter (decidedly less than half as long as wing). In short, when all the species of the two groups are carefully compared it is found that there is no character, apparently, that will serve to separate them.

If *Riccordia* is to be kept separate from *Chlorostilbon*, as I believe it should, it is necessary to remove *R. maugei* from the former and transfer it to the present genus.

KEY TO THE SPECIES AND SUBSPECIES OF CHLOROSTILBON.

- a. Under parts brilliant metallic green. (*Adult males*.)
  - b. Forehead and crown brilliant metallic green, much brighter than color of back.<sup>a</sup>
  - c. Bill pale brownish (pinkish or reddish in life) basally, the mandible with at least basal half thus colored; middle rectrices usually tipped, more or less distinctly, with gray.
  - d. Tail nearly as long as to slightly longer than wing.
  - e. Smaller, with relatively smaller bill and longer and more deeply forked tail, the lateral rectrices narrower terminally; wing, 43–44, tail, 38.5–45, middle rectrices, 14–15, culmen, 13–13.5. (Western Mexico.)

*Chlorostilbon auriceps*, adult male (p. 551).

<sup>a</sup> This character is evident only in fully adult males.

- ee. Larger, with relatively larger bill and shorter and less deeply forked tail, the lateral rectrices broader terminally; wing, 47-50.5, tail, 39-44, middle rectrices, 16-18.5, culmen, 14-15.5. (Cozumél Island, Yucatan.).....**Chlorostilbon forficatus**, adult male (p. 552).
- dd. Tail much shorter than wing. (*Chlorostilbon canivetii*.)
- e. Tail longer and more deeply forked, the middle rectrices always distinctly tipped with gray; tail averaging 34.6, middle rectrices averaging 18.1. (Southeastern Mexico, including Yucatan, to British Honduras.)  
**Chlorostilbon canivetii canivetii**, adult male (p. 553).
- ee. Tail shorter and less deeply forked, the middle rectrices less distinctly (sometimes obsoletely) tipped with gray; tail averaging less than 32, middle rectrices averaging more than 18.5.
- f. Maxilla more extensively brownish (or reddish) basally, never wholly blackish; middle rectrices usually with gray tip distinct; tail averaging longer and more deeply forked; wing averaging 45.8, tail 31.1, middle rectrices 18.6. (Guatemala, Honduras, and Salvador.)  
**Chlorostilbon canivetii osberti**, adult male (p. 556).
- ff. Maxilla less extensively brownish (or reddish) basally, sometimes wholly blackish; middle rectrices usually with gray tip indistinct, sometimes obsolete; tail averaging shorter and less deeply forked; wing averaging 46, tail 27.9, middle rectrices 19.2. (Nicaragua and Costa Rica.)  
**Chlorostilbon canivetii salvini**, adult male (p. 557).
- cc. Maxilla wholly black; middle rectrices without trace of gray tip.
- d. Mandible pale (pink or reddish in life) basally; tail 32.5-38.5. (Porto Rico.)  
**Chlorostilbon maugæi**, adult male (p. 550).
- dd. Mandible wholly black, like maxilla; tail 25.5-30. (Coast of Venezuela and islands of Trinidad, Margarita, Aruba, Bonaire, and Curaçao.)  
**Chlorostilbon caribæus**, adult male (p. 559).
- bb. Forehead and crown dull metallic green, like back, etc. (Bill wholly black; wing averaging 45.6, tail 27.8, middle rectrices 19.4.) (Panamá and southwestern Costa Rica.).....**Chlorostilbon assimilis**, adult male (p. 558).
- aa. Under parts pale gray. (*Adult females*.)
- b. Outermost rectrix with a band of gray across middle portion.
- c. Whitish postocular streak minute; mandible wholly dusky; lateral rectrices narrower, with basal area of dusky not well-defined.  
**Chlorostilbon maugæi**, adult female (p. 550).
- cc. Whitish postocular streak conspicuous; mandible extensively pale basally; lateral rectrices broader, with basal dusky area well-defined.
- d. Tail averaging more than 31.
- e. Culmen 13-15.5 (14.2), tail 30-33.5 (31.7), the lateral rectrices narrower (about 4 mm.).....**Chlorostilbon auriceps**, adult female (p. 551).
- ee. Culmen 15.5-16.5 (15.8), tail 31-35 (32.8), the lateral rectrices broader (about 5-5.5 mm.).....**Chlorostilbon forficatus**, adult female (p. 553).
- dd. Tail averaging less than 30.
- e. Tail averaging more than 29, the middle rectrices averaging less than 22.  
**Chlorostilbon canivetii canivetii**, adult female (p. 554).
- ee. Tail averaging less than 28, the middle rectrices averaging more than 22.
- f. Tail 27.5, the middle rectrices 23.  
**Chlorostilbon canivetii osberti**, adult female (p. 556).
- ff. Tail 25-28 (26.6), the middle rectrices 21-24 (22.7).a  
**Chlorostilbon canivetii salvini**, adult female (p. 557).
- bb. Outermost rectrix without any gray band across middle portion.
- c. Culmen 13-15.5 (14.3).....**Chlorostilbon assimilis**, adult female (p. 558).
- cc. Culmen 16.5-17 (16.7).....**Chlorostilbon caribæus**, adult female (p. 560).

<sup>a</sup>The series of adult females of the different forms of *C. canivetii* is too small, especially of *C. c. osberti* and *C. c. salvini* to admit of their satisfactory differentiation.



## CHLOROSTILBON MAUGÆI (Audebert and Vieillot).

## PORTO RICAN EMERALD.

*Adult male*.—Above rather dark metallic green or bronze-green; tail uniform glossy blue-black, or black glossed with steel blue; remiges very dark brownish slate or dusky, faintly glossed with violaceous; under parts wholly brilliant metallic golden green, the chest slightly purer green (less golden); femoral and lumbar tufts white; maxilla dull black; mandible pale brownish (pink or reddish in life?), with blackish tip; iris dark brown; feet dusky; length (skins), 84–95 (87); wing, 45–50 (48.6); tail, 32.5–38.5 (35.8), middle rectrices, 20–23 (21.5); culmen, 13–14 (13.6).<sup>a</sup>

*Adult female*.—Above metallic green or bronze-green, including middle pair of rectrices, these sometimes more bronzy; second pair of rectrices bronze-green with terminal portion black, the third pair similar, but the black more extensive and a small pale gray spot at apex of inner web; fourth pair with more than basal half bronze-green (duller than on middle pair), crossed by a broad subterminal area of blue-black and with a large terminal spot of pale gray; fifth (outermost) pair similar, but with terminal gray spot still larger and the basal area gray faintly glossed with bronze-green; remiges very dark brownish slate or dusky, faintly glossed with violaceous; loreal and suborbital regions dusky; malar region and under parts very pale gray or grayish white, the sides and flanks mostly metallic green, with feathers deep brownish gray beneath surface; femoral and lumbar tufts white; bill dull black, the base of mandible usually slightly more brownish; iris and feet as in adult male; length (skins), 77–88 (83); wing, 44.5–48 (45.7); tail, 26–32.5 (28.9), middle rectrices, 22–25 (23.6); culmen, 14–16 (14.8).<sup>b</sup>

*Immature male*.—Similar to the adult male, but green of under parts darker and much duller, with brilliant green feathers, indicating the adult plumage, first appearing on lower throat; mandible mostly dusky.

Porto Rico, Greater Antilles (Adjuntas; Mayagüez; Lares; Ponce; El Yunque; Utuado).

*Trochilus maugæus* AUDEBERT and VIEILLOT, Ois. Dorés, i, 1801, 71–79, 80, 93, pls. 37, 38 (Porto Rico; coll. Paris Mus.).—TEMMINCK, Cat. Syst. du Cab. d'Orn., 1807, 84.—VIEILLOT, Nouv. Dict. d'Hist. Nat., vii, 1817, 368.

*T[rochilus] maugæus* VIEILLOT, Tabl. Enc. Méth., ii, 1822, 567.

*Ornismya maugæi* LESSON, Hist. Nat. Ois.-Mouch., 1829, pp. xiv, 194, pls. 68, 69; Index Gen. and Synop. Troch., 1832, p. xxii.

*Trochilus maugei* SUNDEVALL, Öfv. k. Vet.-Ak. Förh., 1869, 600.

*Sporadinus maugei* GUNDLACH, Journ. für Orn., 1874, 312.

[*Sporadinus*] *maugeus* BONAPARTE, Rev. et Mag. de Zool., 1854, 255.

*Sporadinus maugæus* GUNDLACH, Journ. für Orn., 1878, 160, 182 (crit.).

<sup>a</sup> Six specimens.

<sup>b</sup> Ten specimens.

- Sporadinus ? maugæi* GOULD, Mon. Troch., v, 1861, pl. 349; Introd. Troch., oct. ed., 1861, 173.
- Sporadinus maugæi* ELLIOT, Ibis, 1872, 356 (synon.); Classif. and Synop. Troch., 1879, 242.—MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., ii, livr. 1, 1875, 77; iv, livr. 3, 1878, 198.—CORY, Auk, iii, 1886, 359; ix, 1892, 229, in text; Birds West Ind., 1889, 154; Cat. West Ind. Birds, 1892, 13, 107, 132.—SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 58.—BOWDISH, Auk, xix, 1902, 366.
- [*Sporadinus*] *maugæi* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 94.—CORY, List Birds West Ind., 1885, 18.
- [*Cynanthus*] *maugæi* JARDINE, Nat. Libr., Hummingbirds, ii, 1833, 174.
- [*Hylocharis*] *maugæi* GRAY, Hand-list, i, 1869, 150, no. 1944.
- Sporadinus maugæi* BOUCARD, Gen. Hum. Birds, 1894, 118.
- Chlorolampis maugæus* MULSANT and VERREAUX, Classif. Troch., 1866, 40.—GUNDLACH, Anal. Soc. Esp. Hist. Nat., vii, 1878, 225.
- [*Ricordia*] *maugæi* SIMON, Cat. Troch., 1897, 19.
- [*Ricordia*] *maugæus* HARTERT, Das Tierreich, Troch., 1900, 80 (monogr.).
- [*Ricordia*] *maugæi* SHARPE, Hand-list, ii, 1900, 114.
- [*Sporadinus* (*Marsyas*)] *maugæi* MULSANT, Ann. Soc. Linn. Lyon, xxii, 1876, 209; Cat. Ois.-Mouch., 1875, 13.
- (?) [*Thaumatias*] *ourissia* BONAPARTE, Consp. Av., i, 1850, 79, part.
- [*Coeligena*] *ourissia* REICHENBACH, Troch. Enum., 1855, 3, pl. 688, figs. 4519-4521.
- Chlorestes gertrudis* GUNDLACH, Journ. für Orn., 1874, 312 (nomen nudum), 315 (first characterized).
- Chlorolamprolaima gertrudis* CABANIS, Journ. für Orn., 1875, 223.

### CHLOROSTILBON AURICEPS (Gould).

#### GOLDEN-CROWNED EMERALD.

*Adult male*.—Pileum brilliantly metallic golden green; rest of upper parts, including wing-coverts, duller golden green or bronze-green; tail black, faintly glossed with violet-bluish, the six middle rectrices broadly and abruptly tipped with brownish gray, the fourth (on each side, from middle) with terminal fourth (more or less) of inner web broadly edged with the same; remiges brownish slate or dusky, faintly glossed with violaceous; under parts brilliantly metallic golden green, more strongly golden posteriorly, the chin and throat purer (less yellowish) green; femoral tufts white; maxilla dull black, more brownish basally; mandible pale brownish (pinkish of flesh colored in life?), with terminal third (more or less) dusky; iris dark brown; feet dusky; length (skins), 88-93.5 (91); wing, 43-44 (43.4); tail, 38.5-45 (42.5); middle rectrices, 14-15 (14.6); culmen, 13-13.5 (13.2).<sup>a</sup>

*Adult female*.—Above bright metallic green or bronze-green; middle rectrices metallic bluish green to bronze-green, the second, third, and fourth rectrices bluish green for basal two-thirds (approximately), black subterminally, tipped with brownish gray, the outermost (fifth) pair with a broader brownish gray tip and a large median space of light brownish gray between the black subterminal

<sup>a</sup> Four specimens.

and dusky (glossed with greenish blue) basal areas; remiges dusky, faintly glossed with purplish; a dusky suborbital-auricular area, margined above by a grayish white postocular streak; under parts light gray, paler on abdomen and anal region; femoral and lumbar tufts white; maxilla dusky, mandible pale brownish (in dried skins), dusky at tip; feet dusky; length (skins), 83–85 (84); wing, 43–44 (43.5); tail, 30–33.5 (31.7); middle rectrices, 17–20.5 (18.7); culmen, 13–15.5 (14.2).<sup>a</sup>

Southwestern and west-central Mexico, in States of Mexico (Valley of Mexico), Guerrero (Acahuitzotla; Chilpancingo) and Jalisco (San Marcos; Tonila) and Territory of Tepic (Santiago; San Blas; Tepic).

*Trochilus* (———?) *auriceps* GOULD, Jardine's Contr. Orn., 1852, 137 (Mexico; coll. J. Gould).

[*Sporadinus*] *auriceps* BONAPARTE, Rev. et Mag. de Zool., 1854, 225.

*Chlorostilbon auriceps* GOULD, Mon. Troch., v, pt. xiii, May, 1857, pl. 350.—SANCHEZ, An. Mus. Nac. Mexico, i, 1877, 96 (Valley of Mexico).—VILLADA, La Naturaleza, ii, 1874, 361 (Valley of Mexico).—D'OCA, Troq. de Mex., 1875, 38, pl. (8), fig. 27; La Naturaleza, iii, 1875, 160 (Valley of Mexico).—ELLIOT, Ibis, 1875, 168 (synon.; crit.); Classif. and Synop. Troch., 1879, 243.—HERRERA, La Naturaleza, (2), i, 1891, 322 (Valley of Mexico).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 262.—SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 45 (Santiago and San Blas, Tepic; Tonila, Jalisco; Chilpancingo and Acahuitzotla, Guerrero).—JOUY, Proc. U. S. Nat. Mus., xvi, 1893, 784 (San Marcos, s. Jalisco).—HARTERT (E. and C.), Novit Zool., i, 1894, 61 (Chilpancingo, Guerrero; descr. nest and eggs).

*C[hlrorostilbon] auriceps* SALVIN, Ibis, 1889, 366, in text.

[*Chlorostilbon*] *auriceps* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 94.—SHARPE, Hand-list, ii, 1900, 112.

*C[hlrorostilbon] auriceps* HEINE, Journ. für Orn., 1863, 200.—HARTERT, Das Tierreich, Troch., 1900, 74 (monogr.).

*C[hlrorolampis] auriceps* CABANIS and HEINE, Mus. Hein., iii, 1860, 48, footnote.—HEINE, Journ. für Orn., 1863, 200.

*Chlorolampis auriceps* GOULD, Introd. Troch., oct. ed., 1861, 174.—MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., ii, livr. 1, 1875, 79; iv, livr. 3, 1878, 198.—BOUCARD, Notes Troch. du Mex., 1875, 13; Gen. Hum. Birds, 1894, 113.

[*Chlorolampis*] *auriceps* MULSANT, Ann. Soc. Linn. Lyon, n. s., xxii, 1876, 209.

[*Hylocharis*] *auriceps* GRAY, Hand-list, i, 1869, 149, no. 1934.

### CHLOROSTILBON FORFICATUS Ridgway.

#### COZUMEL EMERALD.

Similar to *C. auriceps*, but larger; adult male with lateral rectrices broader and less tapering, and middle rectrices less broadly tipped with brownish gray.

*Adult male*.—Pileum brilliantly metallic golden green or golden; rest of upper parts, including wing-coverts, duller, but still bright, golden green; tail glossy blue-black or black glossed with metallic blue, the six middle rectrices abruptly tipped with deep brownish gray; remiges

<sup>a</sup> Two specimens.



dark brownish slate or dusky, faintly glossed with violaceous; under parts brilliantly metallic golden green, purer (less yellowish) green anteriorly; femoral tufts white; maxilla blackish or dusky for terminal half or more, fading into light brownish (reddish in life?) basally; mandible pale brownish (pinkish or flesh-colored in life), passing into dusky at tip; iris dark brown; feet dusky; length (skins), 95–105 (99); wing, 47–50.5 (48.3); tail, 39–45 (42.5), middle rectrices, 16–18.5 (17.2); culmen, 14.5–15.5 (14.9).<sup>a</sup>

*Adult female*.—Above metallic green or golden green, the pileum not more brilliant than back, etc.; four middle rectrices metallic green or golden green, sometimes darker terminally or subterminally; third rectrix with terminal third or fourth of outer web blue-black or black glossed with violet-blue, the remaining portion metallic green, the inner web with terminal portion blackish, middle portion brownish gray, basal portion metallic greenish; fourth rectrix (from middle) dusky metallic greenish basally, middle portion light brownish gray, subterminal portion (extensively) glossy blue-black, tip pale brownish gray or grayish white; fifth (outermost) rectrix similar, but whitish tip more extensive, and blackish subterminal area correspondingly more restricted; remiges dark brownish slate or dusky, faintly glossed with violaceous; under parts plain grayish white or very pale gray; femoral tufts white; bill, etc., as in adult male, but maxilla more extensively blackish and mandible with more of dusky at tip; length (skins), 83–91 (88); wing, 46–48.5 (47.2); tail, 31–35 (32.8), middle rectrices, 21.5–24 (22.6); culmen, 15–16.5 (15.8).<sup>b</sup>

Islands of Cozumél, Muges, and Holbox, off coast of Yucatan.

*Chlorostilbon forficatus* RIDGWAY, Descr. New Sp. B. Cozumel, Feb. 26, 1885, 3 (Cozumél I., Yucatan; coll. U. S. Nat. Mus.); Proc. Biol. Soc. Wash., iii, 1885, 3; Proc. U. S. Nat. Mus., viii, 1885, 574 (descr.; crit.).—SALVIN, Ibis, 1889, 366 (Muges I., Holbox I., and Cozumél I., Yucatan; crit.); Cat. Birds Brit. Mus., xvi, 1892, 46.—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 263.

*C[hlrorostilbon] forficatus* HARTERT, Das Tierreich, Troch., 1900, 74 (monogr.).

[*Chlorostilbon*] *forficatus* SHARPE, Hand-list, ii, 1900, 112.

*Chlorolampis forficata* BOUCARD, Gen. Hum. Birds, 1894, 113 ("Yucatan").

*Chlorostilbon caniveti* (not *Ornismya canivetii* Lesson) SALVIN, Ibis, 1885, 119 (Cozumél I.; crit.).

### CHLOROSTILBON CANIVETHII CANIVETHII (Lesson).

#### CANIVET'S EMERALD.

Similar to *C. forficatus*, but tail much less deeply forked and wing decidedly shorter.

*Adult male*.—Pileum bright metallic golden green or golden; rest of upper parts less brilliant golden green, varying to almost golden bronze; tail glossy blue-black or black glossed with blue, the four to

<sup>a</sup> Ten specimens.

<sup>b</sup> Six specimens.

six middle rectrices abruptly tipped with deep brownish gray;<sup>a</sup> remiges dark brownish slate or dusky, faintly glossed with violaceous; under parts bright metallic golden green (varying much in relative yellowness of the green, the hue sometimes decidedly golden, sometimes nearly pure green); femoral tufts white; maxilla with terminal half (more or less) dusky, the basal portion pale brownish (carmine red in life);<sup>b</sup> mandible pale brownish (carmine red in life),<sup>b</sup> dusky at tip; iris dark brown; feet dusky; length (skins), 78-93 (81); wing, 41-48 (45.1); tail, 30.5-37.5 (34.6); middle rectrices, 15.5-21.5 (18.1); culmen, 13-15 (14.4).<sup>c</sup>

*Adult female*.—Above bright metallic green or bronze-green, usually duller or more bronzy on pileum; middle rectrices metallic green or bluish green; second, third, and fourth pairs of rectrices metallic green or bluish green for basal two-thirds or more, abruptly black terminally or subterminally (the fourth usually narrowly tipped with gray), the outermost pair broadly tipped with pale brownish gray, and with a broad median area or band of the same between the broad subterminal black band and the dusky basal area; remiges dusky, faintly glossed with purplish; a dusky auricular area margined above and behind by a postocular streak of grayish white; under parts light brownish gray, somewhat paler posteriorly, the sides and flanks glossed or overlaid with metallic green or bronze-green; maxilla dull black, mandible pale brownish (pinkish in life?) basally, dusky terminally; length (skins), 75-86 (81); wing, 42.5-46.5 (44.6); tail, 27-31.5 (29.4), middle rectrices, 19.5-23.5 (21.7); culmen, 15-16 (15.3).<sup>d</sup>

Southeastern Mexico, in States of Tampico (Alta Mira; Tampico), Vera Cruz (Jalapa; Córdoba; Tospán; Coátepec; Atoyác; Orizaba;

<sup>a</sup> When present on the third rectrix, the gray is usually in form of a broad edging to the terminal portion of the outer web.

<sup>b</sup> According to Sumichrast.

<sup>c</sup> Eighteen specimens.

<sup>d</sup> Nine specimens.

| Locality.                                                 | Wing. | Tail. | Middle<br>rec-<br>trices. | Ex-<br>posed<br>culmen. |
|-----------------------------------------------------------|-------|-------|---------------------------|-------------------------|
| MALES.                                                    |       |       |                           |                         |
| Ten adult males from Veracruz (9) and Tamaulipas (1)..... | 45.2  | 35.2  | 18.3                      | 14.6                    |
| Four adult males from Yucatan.....                        | 46.5  | 34.1  | 17.6                      | 14.4                    |
| Two adult males from Chiapas.....                         | 42.2  | 34    | 17.7                      | 14                      |
| Two adult males from British Honduras.....                | 44.7  | 33.2  | 18                        | 13.5                    |
| FEMALES.                                                  |       |       |                           |                         |
| Seven adult females from Veracruz.....                    | 44.4  | 29.9  | 22.1                      | 15.4                    |
| One adult female from Yucatan.....                        | 46    | 28    | 19.5                      | 15                      |
| One adult female from British Honduras.....               | 45    | 27    | 21                        | 15                      |

Miradór; Papantla; San Andrés Tuxtla; Buena Vista; Catemaco; Jaltipán; Misantla; Playa Vicente), Puebla (Atlixco), Oaxaca (Chimalapa; Guichicovi; Tuxtepec), Chiapas (Yajalón), and Yucatan (Mérida; Chichen-Itza; Tunkas; Shkolak; Tabí), and southward along Caribbean coast to British Honduras (Belize; Orange Walk; forest near Manatee Lagoon).

*Ornismya canivetii* LESSON, Hist. Nat. Colibr., Suppl. Ois.-Mouch., 1830-31, 174, 177, pls. 37, 38 ("Brésil"); Index Gen. et Synop. Troch., 1832, p. xxii; Rev. Zool., 1839, 15 (Jalapa, Vera Cruz).

*H[yllocharis] canivetii* GRAY, Gen. Birds, i, Dec., 1848, 114.

*[Hyllocharis] canivetii* GRAY, Hand-list, i, 1869, 149, no. 1931.

*[Thaumatias] caniveti* BONAPARTE, Consp. Av., i, 1850, 78.

*[Chlorestes. δ. Riccordia] canivetii* REICHENBACH, Aufz. der Colibr., 1854, 8.

*[Chlorestes] canivetii* REICHENBACH, Troch. Enum., 1855, 4, pl. 703, figs. 4581-4583.

*[Sporadinus] caniveti* BONAPARTE, Rev. et Mag. de Zool., 1854, 225.

*Sporadinus caniveti* SCLATER, Proc. Zool. Soc. Lond., 1856, 287 (Córdova, Vera Cruz); 1859, 367 (Jalapa).

*Ornismia canivetii* CABOT, Proc. Bost. Soc. N. H., ii, 1845, 55 (Yucatan).

*[Chlorolampis] caniveti* CABANIS and HEINE, Mus. Hein., iii, 1860, 47, footnote.

*Chlorolampis caniveti* GOULD, Introd. Troch., oct. ed., 1861, 174.—MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., ii, livr. 2, 1875, 81, part (Tospán, Vera Cruz); iv, livr. 3, 1878, 198, part.—SUMICHRIST, La Naturelle, v, 1881, 250 (Guichicovi, Oaxaca).—BOUCARD, Troch. de Mex., 1875, 13 (Córdova and San Andrés Tuxtla, Vera Cruz); Gen. Hum. Birds, 1894, 114 (Tospán, near Córdova).

*C[hlorolampis] caniveti* HEINE, Journ. für Orn., 1863, 200.

*[Chlorolampis] caniveti* MULSANT, Ann. Soc. Linn. Lyon, n. s., xxii, 1876, 209.

*Chlorolampis canaveti* LAWRENCE, Bull. U. S. Nat. Mus., no. 4, 1876, 33 (Guichicovi, Oaxaca).

*Chlorostilbon caniveti* GOULD, Mon. Troch., v, 1860, pl. 351.—SCLATER, Cat. Am. Birds, 1862, 318 (southern Mexico).—D'OCA, Troq. de Mex., 1875, 22, pl. 4 (1), fig. 13; La Naturelle, iii, 1875, 59 (Jalapa).—ELLIOT, Classif. and Synop. Troch., 1879, 243, part.—BOUCARD, Proc. Zool. Soc. Lond., 1883, 451 (Izalám, Yucatan).—STONE, Proc. Ac. Nat. Sci. Phila., 1890, 206 (Aguada de Shkolak, Yucatan).—HERRERA, La Naturelle, (2), i, 1891, 322 (Valley of Mexico).—SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 46, part (Mexican and British Honduran localities and references).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 263, part (Mexican and British Honduran localities and references).—CHAPMAN, Bull. Am. Mus. N. H., viii, 1896, 284 (Chichen-Itza, Yucatan).—RICHMOND, Proc. U. S. Nat. Mus., xviii, 1896, 629 (Alta Mira, Tamaulipas).—LANTZ, Trans. Kansas Ac. Sci. for 1896-97 (1899), 221 (Coátepec, Vera Cruz).—COLE, Bull. Mus. Comp. Zool., i, 1906, 128 (Chichen-Itza, Yucatan).

*[Chlorostilbon] caniveti* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 94.—SHARPE, Hand-list, ii, 1900, 112.

*C[hlorostilbon] caniveti* HEINE, Journ. für Orn., 1863, 200 (crit.).

*Chlorostilbon caniveti caniveti* HARTERT, Journ. für Orn., 1900, 361.

*[Chloauges] caniveti* HEINE and REICHENOW, Nom. Mus. Hein. Orn., 1890, 181 (Córdova, Vera Cruz).

*Chloristilbon caniveti* ELLIOT, Ibis, 1875, 168, part (Mexico; synonymy; crit.).

*Chlorostilbon canivete* CHAPMAN, Bull. Am. Mus. N. H., x, 1898, 33 (Jalapa).

*C[hlorostilbon] caniveti (typicus)* HARTERT, Das Tierreich, Troch., 1900, 74 (monogr.).



## CHLOROSTILBON CANIVETII OSBERTI (Gould).

## GUATEMALAN EMERALD.

Similar to *C. c. canivetii*, but tail shorter and less deeply forked, that of adult male with gray tips to middle rectrices much less distinct (being both narrower and darker), sometimes obsolete.

*Adult male*.—Length (skins), 74–86 (79); wing, 43–49 (45.8); tail, 28.5–33.5 (31.1); middle rectrices, 17–20 (18.6); culmen, 13.5–15.5 (14.3).<sup>a</sup>

*Adult female*.—Length (skins), 75–76.5 (76); wing, 45–46.5 (45.7); tail, 27.5; middle rectrices, 23; culmen, 15–15.5 (15.2).<sup>b</sup>

Guatemala (Guatemala City; Cobán; Dueñas; San Gerónimo; Lanquín; Amatitlán; San Antonio; San José; Gualán; Volcán de Fuego), Salvadór (Acajutla; La Libertad; Volcán de San Miguél), and Honduras (San Pedro Sula; Bonaca and Ruatán islands?).<sup>c</sup>

*Chlorostilbon osberti* GOULD, Proc. Zool. Soc. Lond., 1860, 309 (Guatemala; coll. J. Gould); Mon. Troch., pt. xxii, vol. v, 1861, pl. 354.—SALVIN and SCLATER, Ibis, 1860, 40 (Dueñas and Volcán de Fuego, Guatemala, 5,000 ft.).—SALVIN, Ibis, 1860, 195, 263, 271 (Dueñas and San Gerónimo).

[*Chlorostilbon*] *osberti* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 94.—SHARPE, Hand-list, ii, 1900, 112.

*Chlorostilbon osbertii* SCLATER, Cat. Am. Birds, 1862, 318 (Dueñas).

*Chlorolampis osberti* GOULD, Introd. Troch., oct. ed., 1861, 174.—SALVIN, Ibis, 1866, 204.—BOUCARD, Gen. Hum. Birds, 1894, 115, part (Guatemala).

[*Chlorolampis*] *osberti* HEINE, Journ. für Orn., 1863, 200.

[*Hylocharis*] *osberti* GRAY, Hand-list, i, 1869, 149, no. 1933.

[*Chlorostilbon caniveti*] var. *osberti* MULSANT, Ann. Soc. Linn. Lyon, n. s., xxii, 1876, 209.

[*Chlorostilbon*] *caniveti osberti* HARTERT, Journ. für Orn., 1900, 361.

[*Chlorostilbon*] *caniv[eti] osberti* SIMON, Cat. Troch., 1897, 17.

[*Chlorostilbon*] *caniveti osberti* HARTERT, Das Tierreich, Troch., 1900, 74.

*Chlorostilbon canivetii* (not *Ornismya canivetii* Lesson) SCLATER and SALVIN, Ibis, 1859, 130 (Guatemala).

*Chloristilbon caniveti* ELLIOT, Ibis, 1875, 168, part (Guatemala; Honduras; crit.; synonymy).

*Chlorostilbon caniveti* ELLIOT, Classif. and Synop. Troch., 1879, 243, part (Guatemala).—SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 46, part (Lanquín, San Gerónimo, Cobán, Volcán de Fuego, and Dueñas, Guatemala; Volcán de San Miguél and La Libertad, Salvadór; Bonaca and Ruatán islands, Honduras?).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 263, part (Guatemalan and Salvadorean localities).—DEARBORN, Pub. 125, Field Mus. N. H., 1907, 99 (Gualán and San José, Guatemala).

(?) *Chlorostilbon caniveti* SALVIN, Ibis, 1889, 366 (Bonaca and Ruatán islands).

*Chlorolampis caniveti* MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., ii, livr. 2, 1875, 81, part (Dueñas, Guatemala).—BOUCARD, Liste Ois. récol. Guat., 1878, 47.

<sup>a</sup> Ten specimens.

<sup>b</sup> Two specimens.

<sup>c</sup> Specimens from these islands not seen by me. According to Salvin (Ibis, 1889, 366) they present some peculiarities, and it is possible they may represent a definable local form.

## CHLOROSTILBON CANIVETII SALVINI (Gould).

## SALVIN'S EMERALD.

Similar to *C. c. osberti*, but maxilla less extensively brownish (or reddish) basally (sometimes wholly dusky), and middle rectrices of adult male with gray tips (when present—usually they are quite obsolete) narrower and darker (dark sooty grayish).

*Adult male*.—Length (skins), 76–85 (80); wing, 43–49 (46); tail, 30–32.5 (31.5); middle rectrices, 18–21 (19.2); culmen, 13–15.5 (14.4).<sup>a</sup>

*Adult female*.—Length (skins), 71–80 (76); wing, 42.5–49 (45.5); tail, 25–28 (26.6); middle rectrices, 21–24 (22.7); culmen, 14.5–16 (15.1).<sup>a</sup>

Costa Rica (San José; Rancho Redondo; Escazú; Cartago; La Estrella de Cartago; Tucurríqui; San Pedro; Alajuela; Volcán de Miravalles; Tenório; Liberia; Guanacaste; Cerro Santa Maria; Coralillo; Mount Aguacate; Bolsón; Dota Mountains) and Nicaragua (Omotepe; San Juan del Sur; Grenada; Chinandega; Volcán de Chinandega).

[*Chlorolampis*] *salvini* CABANIS and HEINE, Mus. Hein., iii, March, 1860, 48 (Costa Rica; coll. Heine Mus.).—HEINE, Journ. für Orn., 1863, 200 (crit.).

*Chlorolampis salvini* CABANIS, Journ. für Orn., 1862, 164 (Costa Rica).—GOULD, Introd. Troch., oct. ed., 1861, 174.—LAWRENCE, Ann. Lyc. N. Y., ix, 1868, 128 (San José, Costa Rica).—FRANTZIUS, Journ. für Orn., 1869, 317 (Costa Rica).—BOUCARD, Gen. Hum. Birds, 1894, 115 (Costa Rica).

[*Hylocharis*] *salvini* GRAY, Hand-list, i, 1869, 149, no. 1932.

*Chlorostilbon salvini* BERLEPSCH, Proc. U. S. Nat. Mus., xi, 1888, 564, in text (Cartago, Costa Rica).—ZELEDÓN, Anal. Mus. Nac. Costa Rica, i, 1887, 122 (San José and Libéria, Costa Rica).

[*Chlorostilbon*] *salvini* SHARPE, Hand-list, ii, 1900, 113.

[*Chlorostilbon caniveti*] var. *salvini* Mulsant, Ann. Soc. Linn. Lyon, n. s., xxii, 1876, 209.

*Chlorostilbon caniveti salvini* RIDGWAY, Proc. U. S. Nat. Mus., v, Feb. 28, 1883, 501 (San José).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 531 (highlands on Pacific slope, Costa Rica; crit.).

[*Chlorostilbon*] *caniv[eti]* *salvini* SIMON, Cat. Troch., 1897, 17.

[*Chlorostilbon*] *c[aniveti]* *salvini* HARTERT, Journ. für Orn., 1900, 361.

[*Chlorostilbon*] *caniveti salvini* HARTERT, Das Tierreich, Troch., 1900, 75.

[*Chloranges*] *salvini* HEINE and REICHENOW, Nom. Mus. Hein. Orn., 1890, 182 (Costa Rica).

*Chlorolampis caniveti* (not *Ornismya caniveti* Lesson) Mulsant and Verreaux, Hist. Nat. Ois.-Mouch., ii, livr. 2, 1875, 81, part (Costa Rica).—BOUCARD, Proc. Zool. Soc. Lond., 1878, 71 (San José and Cartago, Costa Rica).

*Chlorostilbon caniveti* ELLIOT, Classif. and Synop. Troch., 1879, 243, part (Costa Rica).—ZELEDÓN, Cat. Aves de Costa Rica, 1882, 22.—SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 46, part (Costa Rican and Nicaraguan localities).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 263, part (Costa Rica; Nicaragua).—UNDERWOOD, Ibis, 1896, 441 (Volcán de Miravalles, Costa Rica).—ALFARO, Pag. Illustr., ii, 1905, 795 (habits; descr. nest and eggs; fig. of nest).

*Chlorostilbon caniveti* ELLIOT, Ibis, 1875, 168, part (Costa Rica; crit.; synonymy).

*Chlorostilbon osberti* (not of Gould) NUTTING, Proc. U. S. Nat. Mus., vi, 1883, 375, 394 (San Juan del Sur and Omotepe, Nicaragua).

(?) *Chlorolampis osberti* BOUCARD, Gen. Hum. Birds, 1894, 115, part (Nicaragua).

<sup>a</sup> Ten specimens.

## CHLOROSTILBON ASSIMILIS Lawrence.

## ALLIED EMERALD.

Somewhat resembling *C. canivetii salvini*, but smaller (wing decidedly so), green of upper parts darker and less golden, tail more strongly glossed with blue, and bill wholly black.

*Adult male*.—Above uniform deep metallic grass green, the upper tail-coverts sometimes slightly more bluish green; tail uniform glossy blue-black or black strongly glossed with steel blue; remiges dark brownish slate or dusky, faintly glossed with violaceous; under parts bright metallic green (much more brilliant and decidedly more yellowish than upper parts); femoral tufts white; bill wholly dull black, the basal portion of mandible sometimes slightly more brownish; iris dark brown; feet dusky; length (skins), 67–84 (77); wing, 44–48.5 (45.6); tail, 25.5–30 (27.8); middle rectrices, 17–21 (19.4); culmen, 12.5–15 (14).<sup>a</sup>

*Adult female*.—Above bright metallic green or bronze-green, usually more bronzy anteriorly, purer green posteriorly, especially on upper tail-coverts; tail glossy blue-black (the middle rectrices sometimes dark metallic green), the lateral rectrices with basal third (approximately) of outer web dull metallic green (or grayish glossed with green), the two or three outermost tipped (more broadly on lateral pair) with pale gray; remiges dusky, faintly glossed with purplish; loreal, suborbital, and auricular regions dusky, the latter margined above by a postocular streak of pale gray or grayish white; rictal and malar regions and under parts plain pale gray, the outer portion of sides and flanks overlaid by metallic green or bronze-green; femoral and lumbar tufts white; bill black; feet dusky; length (skins), 69–77 (74); wing, 42–46 (44.1); tail, 23.5–26 (25); middle rectrices, 20.5–24 (22.1); culmen, 13–15.5 (14.3).<sup>b</sup>

<sup>a</sup> Thirty specimens.<sup>b</sup> Thirteen specimens.

| Locality.                                       | Wing. | Lateral rectrices. | Middle rectrices. | Exposed culmen. |
|-------------------------------------------------|-------|--------------------|-------------------|-----------------|
| MALES.                                          |       |                    |                   |                 |
| Seven adult males from Panamá (mainland).....   | 45.3  | 28                 | 18.9              | 14.1            |
| Three adult males from Saboga Island.....       | 45.7  | 28.3               | 19.3              | 14              |
| Ten adult males from San Miguel Island.....     | 46.4  | 28.1               | 19.8              | 14.4            |
| Ten adult males from Costa Rica.....            | 45    | 27.4               | 19.3              | 13.4            |
| FEMALES.                                        |       |                    |                   |                 |
| Three adult females from Panamá (mainland)..... | 43.7  | 25                 | 22.3              | 14.5            |
| One adult female from Saboga Island.....        | 45    | 25                 | 22                | 14              |
| Two adult females from San Miguel Island.....   | 46    | 24.7               | 21.2              | 15.2            |
| Seven adult females from Costa Rica.....        | 43.6  | 25.1               | 22.4              | 13.9            |



Panamá (Colón; Paraiso; Rio Grande Station; Lion Hill; Panamá; Calobre; Chitra; Calovévora; Castillo; Boquete; Divala; Volcán de Chiriquí; Cordillera del Chucu; Santiago and Santa Fé, Verágua) and southwestern Costa Rica (Boruca; Buenos Aires; Dota Mountains).

*Chlorostilbon assimilis* LAWRENCE, Ann. Lyc. Nat. Hist. N. Y., vii, 1862, 292 (Lion Hill Station, Panamá Railway; coll. G. N. Lawrence?); ix, 1863, 128 (Cartago, Costa Rica).—GOULD, Introd. Troch., oct. ed., 1861, 178.—SALVIN, Proc. Zool. Soc. Lond., 1867, 156 (Santa Fé de Verágua, Panamá); Cat. Birds Brit. Mus., xvi, 1892, 54 (Volcan de Chiriquí, Chitra, Santa Fé, Calovévora, Lion Hill, and Paraiso, Panamá).—FRANTZIUS, Journ. für Orn., 1869, 317 (Costa Rica).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 265 (Cordillera del Chucu, Calobre, etc., Panamá).—BOUCARD, The Hum. Bird, ii, 1892, 79 (Verágua; Colón); Gen. Hum. Birds, 1894, 124 (Colón; Panamá; Veragua).—CHERRIE, Expl. Zool. Merid. Costa Rica, 1893, 44 (Boruca, s. w. Costa Rica; crit.).—BANGS, Auk, xviii, 1891, 28 (San Miguel I., Bay of Panama); xxiv, 1907, 295 (Boruca); Proc. New Engl. Zool. Club, iii, 1902, 29 (Boquete, Panamá, 4,000–4,800 ft.).—THAYER and BANGS, Bull. Mus. Comp. Zool., xlii, 1905, 150 (San Miguel and Saboga islands, Bay of Panamá).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 532 (Dota Mts., Boruca, and Buenos Aires, Costa Rica).

*Chlorostilbon assimilis* HARTERT, Das Tierreich, Troch., 1900, 76.

[*Chlorostilbon*] *assimilis* SHARPE, Hand-list, ii, 1900, 113.

[*Chlorolampis*] *assimilis* HEINE, Journ. für Orn., 1863, 201 (Panamá).

*Chlorolampis assimilis* SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1864, 365 (Lion Hill).—SALVIN, Proc. Zool. Soc. Lond., 1867, 156 (Santiago and Santa Fé de Verágua, Panamá; crit.); 1870, 211 (Volcán de Chiriquí, Calovévora, Castillo, and Cordillera del Chucu, Panamá).

[*Hylocharis*] *assimilis* GRAY, Hand-list, i, 1869, 149, no. 1929.

*Chlorostilbon angustipennis* (not *Trochilus angustipennis* Fraser) ELLIOT, Ibis, 1875, 153, part (Panamá; Verágua; crit.; synonym.); Classif. and Synop. Troch., 1879, 245, part (Panamá; Verágua).—ZELEDÓN, Cat. Aves de Costa Rica, 1882, 22; Anal. Mus. Nac. Costa Rica, i, 1887, 122 (Panamá).

[*Chlorostilbon*] *angustipennis* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 94, part (Panamá; Veragua).

*Chrysomirus angustipennis* MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., ii, livr. 2, 1875, 102, part (Panamá; Veragua); iv, livr. 3, 1878, 199, part.

*Chlorostilbon panamensis* BOUCARD, Gen. Hum. Birds, sig. o, March, 1894, 124, in text (Panamá; name proposed "if it should prove new;" see Hartert, Novit. Zool., iv, 1897, 152).

#### CHLOROSTILBON CARIBÆUS Lawrence.

##### CARIBBEAN EMERALD.

Similar to *C. assimilis*, but wing and tail much shorter and bill longer, the adult male with pileum brilliant metallic golden instead of dull metallic grass green.

*Adult male*.—Pileum brilliant metallic golden green; rest of upper parts varying from metallic golden green to nearly grass green, the upper tail-coverts sometimes slightly more bluish green; tail glossy blue-black or black glossed with steel-blue; remiges dark brownish slate or dusky, faintly glossed with violaceous; under parts brilliant metallic golden green, usually appreciably more golden posteriorly, purer (less yellowish) green anteriorly; femoral tufts white; bill

wholly black; iris dark brown; feet dusky; length (skins), 70-79 (75); wing, 41.5-45 (43.1); tail, 23.5-26 (24.4), middle rectrices, 17-22.5 (19); culmen, 14.5-16 (15.4).<sup>a</sup>

*Adult female*.—Above rather dull metallic green or bronze-green, the upper tail-coverts and middle pair of rectrices more bluish green; tail (except middle pair of rectrices) glossy blue-black or black glossed with greenish blue (this more greenish toward middle pair), two outer rectrices tipped (second very narrowly) with pale brownish gray or dull grayish white; remiges brownish slate, faintly glossed with purplish; under parts pale brownish gray, fading into white on abdomen; femoral tufts white; bill, etc., as in adult male; length (skins), 72-77 (75); wing, 41.5-45.5 (43.5); tail, 22.5-24 (23.2), middle rectrices, 21; culmen, 16.5-17 (16.7).<sup>b</sup>

*Immature male*.—Similar to the adult female, but tail wholly glossy blue-black (as in adult male) and pale gray of under parts intermixed with metallic green.

Islands of Curaçao, Aruba, Bonaire, Margarita, and Trinidad, and adjacent coast district of Venezuela (La Guayra).

*Chlorostilbon atala* (not *Ornismya atala* Lesson) GOULD, Mon. Troch., pt. xx, Sept., 1860; vol. v, 1861, pl. 356; Introd. Troch., oct. ed., 1861, 177 (crit.).—ELLIOT, Ibis, 1875, 159 (synon.; crit.; Trinidad; Curaçao); Classif. and Synop. Troch., 1879, 246 (Trinidad).—SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 55 (excl. syn. part).—CHAPMAN, Bull. Am. Mus. N. H., vi, 1894, 58 (Trinidad).—BOUCARD, Gen. Hum.-Birds, 1894, 124 (monogr.).

*H[ylacharis] atala* GRAY, Gen. Birds, i, Dec., 1848, 115.

(?) [*Saucerottia*] *atala* BONAPARTE, Consp. Av., i, 1850, 77 (Brazil).

[*Chlorestes*] *atala* REICHENBACH, Troch. Enum., 1855, 4, pl. 700, fig. 4568.

*Chrysomirus atala* MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., iv, livr. 3, 1878, 199.

*Prasitis atala* BOUCARD, The Hum. Bird, ii, 1892, 79 (Valencia, Colombia).

*Chlorostilbon caribæus* LAWRENCE, Ann. Lyc. Nat. Hist. N. Y., x, 1874 (pub. March, 1871!), 13, 14 (Island of Curaçao, Dutch West Indies; coll. G. N. Lawrence).—BERLEPSCH, Journ. für Orn., 1892, 87 (Curaçao; crit.).—PETERS, Journ. für Orn., 1892, 119 (Curaçao).—HARTERT, Ibis, 1893, 299 (Aruba; crit.), 319 (Curaçao; crit.; habits; descr. nest and eggs), 328 (Bonaire); Novit. Zool., ix, 1902, 301 (islands of Aruba, Curaçao, and Bonaire).—CORY, Pub. 137, Field Mus. N. H., 1909, 200 (Aruba), 206 (Curaçao), 212 (Bonaire), 245 (Margarita).

[*Chlorostilbon*] *caribæus* HARTERT, Das Tierreich, Troch., 1900, 76 (monogr.).

<sup>a</sup> Sixteen specimens.

<sup>b</sup> Two specimens, from Margarita Island.

| Locality.                                                  | Wing. | Tail. | Middle rectrices. | Exposed culmen. |
|------------------------------------------------------------|-------|-------|-------------------|-----------------|
| MALES.                                                     |       |       |                   |                 |
| Three adult males from coast of Venezuela (LaGuayra) ..... | 43.8  | 25.3  | 18.7              | 15.5            |
| Five adult males from Margarita Island .....               | 42.4  | 23.8  | 18                | 15.2            |
| Six adult males from Curaçao .....                         | 43.2  | 24.6  | 20.9              | 15.6            |
| Two adult males from Trinidad .....                        | 43.5  | 24.2  | 17.5              | 15              |

- [*Chlorostilbon*] *caribæus* SHARPE, Hand-list, ii, 1900, 113 (w. Venezuela; Trinidad; Aruba, Curaçao, Bonaire, and Margarita islands).  
*Chlorostilbon caribbæa* ROBINSON, Proc. U. S. Nat. Mus., xviii, 1896, 672 (Margarita I.), 682 (Guanta, Venezuela), 684 (La Guayra, Venezuela).—ROBINSON and RICHMOND, Proc. U. S. Nat. Mus., xxiv, 1901, 173 (coast of Venezuela).—CLARK (A. H.), Auk, xix, 1902, 263 (Margarita I.).  
*Chlorostilbon caribbeus* SIMON and DALMAS, Ornith., xi, 1901, 212 (Curaçao).  
*Chlorostilbon caribbæus* LOWE, Ibis, 1907, 559 (Margarita I.).  
[*Chlorostilbon*] *caribeus* SIMON, Cat. Troch., 1897, 18.  
(?) *Chlorostilbon caribbeus lessoni* SIMON and DALMAS, Ornith., xi, 1901, 212, 213 (Carúpano, Cariaco, Andes de Cumaná, and Ciudad Bolívar, Venezuela).  
[*Chrysomiras atala*] var. *caribæus* MULSANT, Ann. Soc. Linn. Lyon, n. s., xxii, 1876, 210.  
(?) *Chlorostilbon caribæus nanus* BERLEPSCH and HARTERT, Novit. Zool., ix, April, 1902, 86 (Caicará, Venezuela; coll. Tring Mus.).

### Genus HELIOTHRYX Boie.

- Heliothryx* BOIE, Isis, 1831, 547. (Type, *Trochilus auritus* Linnaeus.)  
*Heliothrys* (emendation) GRAY, List Gen. Birds, 1840, 14.  
*Heliothrix* (emendation) STRICKLAND, Ann. Nat. Hist., vi, 1841, 419.—CABANIS and HEINE, Mus. Hein., iii, March, 1860, 28.  
*Heliotrix* (emendation) BONAPARTE, Consp. Av., i, 1850, 69.

Rather large Trochilidæ (length about 100–120 mm.) with the straight bill excessively compressed (finely wedge-shaped) anteriorly, tail more or less graduated (but rectrices broadly rounded terminally), under parts white, and with a black stripe on side of head.

Bill (unfeathered portion) about as long as head, straight, rather broad and depressed basally, excessively compressed terminally, narrowly cuneate with finely acuminate tip, in vertical profile; culmen distinctly ridged throughout (but less sharply so posteriorly); tomia smooth; mandible with a longitudinal, median narrow groove on basal half only. Nasal operculum very narrow, completely hidden by the dense, closely appressed frontal feathering, which extends to or beyond anterior end of the nostrils, forming a short obtuse point or antia on each side of culmen or these merged into a single, broader, median antia. Feet excessively small; tarsus feathered on upper portion, except on inner side; lateral toes about equal in length, slightly shorter than middle toe; hallux much shorter than lateral toes. Wing about four times as long as exposed culmen, the outermost primary longest. Tail about three-fifths as long as wing in adult males to five-sixths as long in adult females, graduated, the rectrices rather soft, with broadly rounded tip.

*Coloration*.—Metallic grass-green or bronze-green above, the middle rectrices bluish black, lateral rectrices and under parts pure white (faintly spotted with grayish on chest in young); a black loreal, sub-orbital and auricular stripe. Adult males with a stripe of brilliant metallic emerald green beneath the black stripe on side of head, a violet post-auricular tuft, sometimes with the pileum metallic violet.

*Range*.—Guatemala to Guiana and Peru. (Three species.)



**HELIOTHRYX BARROTI** (Bourcier and Mulsant).**BARROT'S FAIRY.**

*Adult male*.—Forehead and crown bright metallic violet or blue-violet ("royal purple"); loreal, suborbital, and auricular regions opaque velvety black, the last terminated by a spot or short tuft of metallic bluish violet; a band extending from malar apex to side of neck, immediately beneath the black loreal-suborbital-auricular stripe, very brilliant metallic emerald green; occiput, hindneck, back, scapulars, wing-coverts, rump, and upper tail-coverts uniform soft metallic green; four middle rectrices slightly glossy blue-black; remaining rectrices pure white; under parts, from chin to under tail-coverts, inclusive, immaculate pure white; bill black; feet light brownish (in dried skins); length (skins), 94–121 (108); wing, 63–69 (65.9); tail, 35.5–54.5 (45.4); culmen, 15–18 (16.7).<sup>a</sup>

*Adult female*.—Similar to the adult male, but forehead and crown green, like rest of upper parts, white of under parts extending up to the black loreal-suborbital-auricular stripe, and violet post-auricular spot wanting; chest sometimes (in younger individuals) spotted or streaked with brownish gray; tail averaging much longer; length (skins), 117–134 (124); wing, 63–70.5 (66.6); tail, 43–73 (60.9); culmen, 15.5–19 (17.1).<sup>b</sup>

<sup>a</sup> Twenty-six specimens.<sup>b</sup> Twenty-seven specimens.

| Locality.                                     | Wing. | Tail. | Ex-<br>posed<br>culmen. |
|-----------------------------------------------|-------|-------|-------------------------|
| <b>MALES.</b>                                 |       |       |                         |
| One adult male from Guatemala.....            | 66.5  | 49.5  | 17                      |
| Four adult males from Honduras.....           | 67.3  | 51.7  | 16.2                    |
| Ten adult males from Honduras.....            | 66    | 45.6  | 16.6                    |
| Seven adult males from Panamá.....            | 65.8  | 46.6  | 17.2                    |
| Four adult males from western Ecuador.....    | 64.1  | 37.1  | 16.2                    |
| <b>FEMALES.</b>                               |       |       |                         |
| One adult female from Guatemala.....          | 70.5  | 58    | 17                      |
| One adult female from Honduras.....           | 67.5  | 72    | 19                      |
| Ten adult females from Costa Rica.....        | 66.6  | 63.5  | 16.4                    |
| Eight adult females from Panamá.....          | 67.1  | 60.6  | 17.5                    |
| Seven adult females from western Ecuador..... | 65.1  | 56.1  | 17                      |

I am unable to substantiate the claims of a subspecies, *H. b. alincius*, for Guatemala to Costa Rica, as proposed by Mr. Oberholser, since the characters ascribed do not hold good. It is possible the bird from western Ecuador should be separated on account of its much shorter tail, usually more bluish violet crown, and apparently broader subauricular green stripe; but a much larger series is necessary to determine the question.

The individual variation in length of tail is very great, especially among females.

*Immature female*.—Similar to the adult female, but pileum (especially forehead) and sides of head partly (sometimes mostly) dull brown.

Guatemala (Choctúm; Chiséc; Las Salinas; Rio Polochíc between Telemán and Panzos; track between Cajabón and San Luís), British Honduras (Belize; San Felipe; Cayo) and southward through Honduras (Yaruca; Céiba; Chamellicón), Nicaragua (La Libertad, Chontales), Costa Rica (Angostura; Cervantes; Tucurríqui; Jiménez; Carrillo; Bonilla; Guayabo; La Hondura; San José; La Vijagua; El General; Paso Real, Boruca; Pozo Azul de Pirris), Panama (Volcán de Chiriquí; Boquete; Boquete de Chitra; Calovévora; Santa Fé de Veragua; Castillo; Laguna del Castillo; Bugaba; Lion Hill; Obispo; Panamá) and Colombia (Cartagena; Popayán; Bogotá; Remédios, Antioquia) to western Ecuador (Santo Domingo; Citado; Chimbo; Esmeraldas; west side of Pichincha; Rio Pescado, near Nanegál; Gualabamba; Foreste del Rio Peripa).

*O[rnismya] barroti* BOURCIER and Mulsant, Ann. Soc. d'Agric. Lyon, vi, 1843, 48, pl. 4 (Cartagena, Colombia).

*T[rochilus] barroti* BOURCIER, Rev. Zool., vi, March, 1843, 72.

*H[eliiothrix] barroti* GRAY, Gen. Birds, i, Dec., 1848, 115.

*[Heliothrix] barroti* GRAY, Hand-list, i, 1869, 153, no. 1978.

*[Heliothrix] barroti* BONAPARTE, Conspectus, Av., i, 1850, 69 (Cartagena); Rev. et Mag. de Zool., 1854, 251.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 88.—SHARPE, Hand-list, ii, 1900, 137.

*Heliothrix barroti* GOULD, Mon. Troch., pt. iv, 1853; vol. iv, 1861, pl. 217; Introd. Troch., oct. ed., 1861, 121; Proc. Zool. Soc. Lond., 1870, 803 (Citado, w. Ecuador).—SALVIN, Ibis, 1860, 272 (tierra caliente, Guatemala), 400 (Las Salinas, Choctúm, and Polochíc Valley, Guatemala); 1872, 320 (Chontales, Nicaragua); Proc. Zool. Soc. Lond., 1867, 155 (Santa Fé de Veragua, Panamá; crit.); 1870, 209 (Volcán de Chiriquí, Bugaba, and Boquete de Chitra, Panamá; crit.); Cat. Birds Brit. Mus., xvi, 1892, 32, 655.—SALVIN and SCLATER, Ibis, 1860, 400 (Choctúm, Chiséc, and Rio Polochíc, Guatemala).—SCLATER, Cat. Am. Birds, 1862, 305.—LAWRENCE, Ann. Lyc. N. Y., vii, 1861, 291 (Lion Hill Station, Panamá); ix, 1868, 125 (Angostura and Cervantes, Costa Rica).—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1864, 365 (Panamá); 1879, 529 (Remédios, Antioquia, Colombia).—MULSANT and VERREAUX, Classif. Troch., 1866, 58; Hist. Nat. Ois.-Mouch., ii, livr. 4, 1876, 242, pl. 52 (Guatemala; Colombia; Ecuador); iv, livr. 3, 1878, 209 (crit.).—FRANTZIUS, Journ. für Orn., 1869, 316 (Costa Rica).—ELLIOT, Ibis, 1876, 397 (synonymy; crit.); Classif. and Synop. Troch., 1879, 175.—ZELEDÓN, Cat. Aves de Costa Rica, 1882, 21; Anal. Mus. Nac. Costa Rica, i, 1887, 122.—BERLEPSCH and TACZANOWSKI, Proc. Zool. Soc. Lond., 1883, 567 (Chimbo, w. Ecuador; crit.).—TACZANOWSKI, Orn. du Pérou, i, 1884, 258.—BERLEPSCH, Journ. für Orn., 1887, 335 (Cartagena, Popayán, and Antioquia, Colombia).—BOUCARD, The Hum. Bird, ii, 1892, 86 (Bogotá, Colombia); Gen. Hum. Birds, 1895, 314 (Colombia; Ecuador).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 251.—HARTERT (E. and C.), Novit. Zool., i, 1894, 1 (Rio Pescado, near Nanegál, w. Ecuador).—LANTZ, Trans. Kansas Ac. Sci. for 1896-97 (1899), 220 (Cayo, Brit. Honduras).—SALVADORI and FESTA, Boll. Mus. Zool., etc., Torino, xv, 1900, 8 (Gualabamba and Foreste

- del Rio Peripa, w. Ecuador).—OBERHOLSER, Proc. U. S. Nat. Mus., xxiv, 1902, 339 (Santo Domingo, w. Ecuador; crit.).—BANGS, Proc. New Engl. Zool. Club, iii, 1902, 31 (Boquete and Volcán de Chiriquí, 4,500–7,000 ft., Panamá); Bull. Mus. Comp. Zool., xxxix, 1903, 144 (Céiba and Yaruca, Honduras).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 543 (lowlands of Costa Rica, up to 4,000 ft.).—FERRY, Pub. 146, Field Mus. N. H., orn. ser., i, no. 6, 1910, 263 (Guayabo, Costa Rica).
- Heliothrix* *barroti* CABANIS and HEINE, Mus. Hein., iii, 1860, 28, footnote (Colombia; Ecuador; Veragua).—HEINE, Journ. für Orn., 1863, 183.—HARTERT, Das Tierreich, Troch., 1900, 187.
- [*Heliothrix*] *barroti* REICHENBACH, Aufz. der Colibr., 1854, 13; Troch. Enum., 1855, 11.
- Heliothrix purpureiceps* GOULD, Proc. Zool. Soc. Lond., 1855, 87 (Popayán, Colombia; coll. J. Gould); Mon. Troch., iv, 1861, pl. 216.—SCLATER, Proc. Zool. Soc. Lond., 1860, 296 (Esmeraldas, w. Ecuador).
- Heliothrix purpureiceps* CABANIS and HEINE, Mus. Hein., iii, 1860, 28, footnote.
- [*Heliothrix barroti*] var. *purpureiceps* MULSANT, Ann. Soc. Linn. Lyon, n. s., xxii, 1876, 214.
- Heliothrix violifrons* GOULD, Introd. Troch., oct. ed., 1861, 122 ("Cartagena" = Veragua, Panamá; coll. J. Gould; cites Mon. Troch., iv, pl. 217.).—SALVIN. Proc. Zool. Soc. Lond., 1870, 210.—BOUCARD, The Hum. Bird, ii, 1892, 86 (Veragua); Gen. Hum. Birds, 1895, 314 (Veragua; Panamá).
- [*Heliothrix*] *violifrons* GRAY, Hand-list, i, 1869, 153, no. 1979.
- [*Heliothrix barroti*] var. *violifrons* MULSANT, Ann. Soc. Linn. Lyon, n. s., xxii, 1876, 214.
- Heliothrix barroti alincius* OBERHOLSER, Proc. U. S. Nat. Mus., xxiv, no. 1258, Jan. 18, 1902, 339, in text (Choctún, Guatemala; coll. U. S. Nat. Mus.).

### Genus EUGENES Gould.

*Eugenes* *a* GOULD, Mon. Troch., pt. xii, Sept., 1856, text to pl. 59; Introd. Troch., oct. ed., 1861, 57. (Type, *Trochilus fulgens* Swainson.)

Large Trochilidæ (length about 120–130 mm.) with bill much longer than head, straight, terete; culmen rounded but basally contracted into a narrow ridge; tomia smooth; mandible with a lateral median groove. Nasal operculum nude, but hidden (except extreme edge) by dense oppressed frontal feathers, which extend considerably beyond its anterior end, forming a short angle or antia on each side of culmen. Tarsus feathered in front, except for lower portion; outer toe slightly shorter than middle toe, the inner still (but very slightly) shorter. Wing about three times as long as exposed culmen in adult males, relatively much shorter<sup>b</sup> (sometimes only twice as long) in females, the outermost primary longest. Tail a little more than half (in females) to three-fifths (in adult males) as long as wing, deeply emarginate in adult males, faintly emarginate or double-rounded in females, the rectrices moderately broad, with rounded tip.

*Coloration*.—Back, etc., metallic green or bronze-green; a small white postocular spot; tail bronzy. Adult male with forehead and

<sup>a</sup> *Εὐγενής*, nobilis. (Gould.)

<sup>b</sup> Owing to greater length of the bill in females.



crown bright metallic violet, chin and throat brilliant metallic green, remaining under parts dark metallic bronze-green or blackish. Adult females with pileum dull bronze-greenish or dusky, under parts grayish, lateral rectrices blackish subterminally and tipped with pale gray.

*Range*.—Southwestern United States (near Mexican boundary) to Costa Rica, in higher mountains. (Two species.)

## KEY TO THE SPECIES OF EUGENES.

- a*. Pileum metallic violet, throat metallic emerald green. (*Adult males*.)
  - b*. Chest velvety black; smaller: Wing 69.5–76 (73), culmen 25.5–31 (27.4). (Guatemala to southern Arizona.).....**Eugenes fulgens**, adult male (p. 565).
  - bb*. Chest dull metallic green or bronze-green; larger: Wing 76–81 (77.8); culmen, 29–33 (31). (Costa Rica and western Panamá.)
    - Eugenes spectabilis**, adult male (p. 568).
- aa*. Pileum dull metallic greenish or dusky; throat dull brownish white or pale brownish gray, streaked or spotted with darker. (*Adult females*.)
  - b*. Smaller: Wing, 66.5–70.5 (68.7); culmen, 27–30.5 (29.1).
    - Eugenes fulgens**, adult female (p. 566).
  - bb*. Larger: Wing, 68–74.5 (73.5); culmen, 35–37.5 (36.3).
    - Eugenes spectabilis**, adult female (p. 569).

## EUGENES FULGENS (Swainson).

## RIVOLI HUMMING BIRD.

*Adult male*.—Pileum rich metallic violet or royal purple, the forehead (at least anteriorly) blackish, usually glossed with green or bluish green; hindneck, sides of occiput, and auricular region velvety black in position *a*, metallic bronze, bronze-green, or golden green in position *c*; rest of upper parts metallic bronze, bronze-green, or golden green, including tail, the latter sometimes with rectrices passing into pale grayish at tip; remiges dark brownish slate or dusky, faintly glossed with purple or purplish bronze; chin and throat brilliant metallic emerald green (more yellowish in position *a*, more bluish in position *b*), this brilliant green area extending much farther backward laterally than medially; chest and upper breast velvety black in position *a* (bronze or bronze-green in position *c*), passing into dusky bronze or bronze-green on lower breast, this into grayish brown or sooty grayish on abdomen and flanks; femoral and anal tufts white; a small white postocular spot or streak (sometimes a whitish rictal streak also); under tail-coverts light brownish gray (sometimes glossed with bronze or bronze-green) margined (more or less distinctly) with whitish; bill dull black; iris dark brown; feet dusky; length (skins), 114–136 (125); wing, 69.5–76 (73); tail, 40.5–48 (43.2); middle rectrices, 32.5–41 (36.5); culmen, 25.5–31 (27.4).<sup>a</sup>

<sup>a</sup> Thirty-one specimens.

*Adult female*.—Above, including four middle rectrices, metallic bronze, bronze-green, or golden green, the pileum duller (sometimes dull grayish brown anteriorly); three outer rectrices (on each side) with basal half (more or less) bronze-green, then black, the tip brownish gray or grayish brown, this broadest on outermost rectrix, much smaller on third;<sup>a</sup> remiges as in adult male; a postocular streak of white and below this a dusky auricular area; under parts brownish gray or buffy grayish, glossed laterally with metallic bronze or bronze-green, the feathers of chin and throat margined with paler or with dull grayish white, producing a squamate appearance; femoral and anal tufts white; under tail-coverts brownish gray (sometimes glossed with bronze-green) margined with pale brownish gray or dull whitish; bill, etc., as in adult male; length (skins), 110–125 (119); wing, 66.5–70.5 (68.7); tail, 37.5–41.5 (39.4); culmen, 27–30.5 (29.1).<sup>b</sup>

*Immature male*.—Intermediate in coloration between the adult male and adult female, the crown partly violet, the throat only partly green, and chest slightly intermixed with black, the tail exactly intermediate, both in form and color.

*Young female*.—Similar to the adult female, but feathers of upper parts narrowly margined terminally with pale grayish buffy and under parts slightly darker and suffused, more or less, with pale brownish buffy.

Southern Arizona (Chiracáhua, Santa Rita, Huachuca, Santa Catalina, and San Luís Mountains; Mount Graham; Camp Grant; Carr's Cañon) and southward through highlands of Mexico, in States of Chihuáhua, Tamaulipas (Miquihuana; Boque Negro), San Luís Potosí (Sierra San Luís Potosí), Guanajuato, Durango (Rancho Baillón; Arroyo del Buéy), Jalisco (Sierra de Bolaños; Sierra de Valparaiso; Sierra de Nayarít), Michoacán (Patzcuaro; Mount

<sup>a</sup> Sometimes the fourth rectrix also has a small grayish terminal spot, the subterminal portion being blackish.

<sup>b</sup> Fourteen specimens.

| Locality.                                      | Wing. | Tail. | Middle<br>rec-<br>trices. | Ex-<br>posed<br>culmen. |
|------------------------------------------------|-------|-------|---------------------------|-------------------------|
| MALES.                                         |       |       |                           |                         |
| Ten adult males from southern Arizona.....     | 72.8  | 42    | 36.2                      | 27.2                    |
| Ten adult males from Vera Cruz and Puebla..... | 72.4  | 43.1  | 36.6                      | 26.7                    |
| Five adult males from Oaxaca.....              | 73.8  | 43.2  | 36.6                      | 27                      |
| Six adult males from Guatemala.....            | 73.5  | 43.7  | 36.7                      | 29.4                    |
| FEMALES.                                       |       |       |                           |                         |
| Ten adult females from southern Arizona.....   | 68.7  | 39.2  | .....                     | 29                      |
| Two adult females from Mexico and Morelos..... | 67.7  | 39.2  | .....                     | 27                      |
| Two adult females from Oaxaca.....             | 69.5  | 40.2  | .....                     | 29.7                    |
| One adult female from Guatemala.....           | 68.7  | 39.4  | .....                     | 29.1                    |

Tancítaro), Morelos (Huitzilác), Mexico (Salazár; "Valley of Mexico"; Ajusco; Tenango; Chimalpa; Hacienda Eslava; Temascáltepec; Rio Frio, Ixtaccihuatl), Puebla (Huachinango; Chalchicomula), Vera Cruz (Orizaba; Miradór; Jalapa; Córdova; Coátepec; Las Vigas; Téxolo), Oaxaca (Cerro San Felipe; Mitla; Oaxaca; Tonagua; Totón-tepec; La Parada), Guerrero (Omiteme; Chilpancingo; Xucumanatlán), and Colima (Sierra Nevada) and Territory of Tepic, to highlands of Guatemala (Santa Maria, San Martín, and Chuipaché; Quezaltenango; El Rincón, San Marcos; Volcán de Fuego; Tactic; Dueñas; Cobán; near Tecpám; Montañas de Chilasco); northern Nicaragua (San Rafael del Norte).

*Trochilus fulgens* SWAINSON, Philos. Mag., n. s., i, 1827, 441 (Temascáltepec, Mexico; coll. Bullock Mus.).

[*Trochilus*] *fulgens* GRAY, Hand-list, i, 1869, 137, no. 1749.

*M[ellisuga] fulgens* GRAY, Gen. Birds, i, Dec., 1848, 112.

[*Delatiria*] *fulgens* BONAPARTE, Consp. Av., i, 1850, 70.

[*Cœligena*] *fulgens* BONAPARTE, Rev. et Mag. de Zool., 1854, 252.—REICHENBACH, Troch. Enum., 1855, 3, pl. 686, figs. 4513, 4514.

[*Coeligena. a. Coeligena*] *fulgens* REICHENBACH, Aufz. der Colibr., 1854, 7.

*Cœligena fulgens* SCLATER, Proc. Zool. Soc. Lond., 1856, 287 (Córdova, Vera Cruz); 1858, 297 (Oaxaca); 1859, 367 (Jalapa, Vera Cruz), 386 (Totón-tepec, Oaxaca).

*Eugenes fulgens* GOULD, Mon. Troch., pt. xii, Sept., 1856; vol. v, 1861, pl. 59; Introd. Troch., oct. ed., 1861, 58.—MOORE, Proc. Zool. Soc. Lond., 1859, 53 (Guatemala).—SCLATER and SALVIN, Ibis, 1859, 128 (Guatemala).—SALVIN, Ibis, 1860, 197, 261 (Dueñas, Cobán, and Tactic, Guatemala; habits).—SCLATER, Cat. Am. Birds, 1862, 228 (Dueñas); Proc. Zool. Soc. Lond., 1864, 176 (City of Mexico).—BOUCARD, Notes quelques Troch., 1873, 5 (Mexico; Puebla; Oaxaca; Cobán, Guatemala; habits); Liste Ois. récol. Guat., 1878, 45; Gen. Hum. Birds, 1895, 296.—DUGÈS, La Naturelle, i, 1873, 141 (Guanaajuato).—VILLADA, La Naturelle, ii, 1874, 349, pl. 1, fig. 5.—D'OCA, La Naturelle, iii, 1875, 164 (Jalapa and Coátepec, Vera Cruz); Troq. de Mex., 1875, 41, pl. (8), fig. 30.—HENSHAW, Am. Nat., viii, 1874, 241 (Mt. Graham, Arizona); Rep. Orn. Spec. Wheeler's Surv. for 1873 (1874), 132, 162 (Camp Grant, Arizona); Zool. Expl. W. 100th Merid., 1875, 379.—COUES, Check List, 1874, no. 274 bis; 2d ed., 1882, no. 408.—MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., ii, livr. 3, 1876, 212, pl. 47 (Mexico; Guatemala); iv, livr. 3, 1878, 206 (synonymy), livr. 4, 1878, pl. 64.—ELLIOT, Classif. and Synop. Troch., 1879, 60.—RIDGWAY, Proc. U. S. Nat. Mus., iii, 1880, 187, 218, 233, 312; Nom. N. Am. Birds, 1881, no. 334; Rep. U. S. Nat. Mus. for 1890 (1891), 319, pl. 35 (monogr.; habits).—BREWSTER, Auk, ii, 1885, 199 (Santa Rita Mts., Arizona).—FERRARI-PEREZ, Proc. U. S. Nat. Mus., ix, 1886, 157 (Puebla; Jalapa).—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886, no. 426; 3d ed., 1910, 201.—HERRERA, La Naturelle, (2), i, 1891, 322 (Valley of Mexico).—POLING, Auk, vii, 1890, 402 (Huachuca Mts., Arizona; habits; descr. nest and eggs).—RHODES, Proc. Ac. Nat. Sci. Phila., 1892, 117 (Santa Catalina Mts., Arizona, in pine belt).—SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 302.—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 328 (San Rafael del Norte, Nicaragua; etc.).—HARTERT (E. and C.), Novit. Zool., i, 1894, 21 (Chilpancingo, Guerrero, 6,000 ft., Oct.).—BENDIRE, Life Hist. N. Am. Birds, ii, 1895, 188.—LANTZ,



- Trans. Kansas Ac. Sci. for 1896-97 (1899), 220 (Coátepec, Vera Cruz).—LOOMIS, Auk, xix, 1902, 83 (San Gorgonio Pass, Riverside Co., California, 1 spec., July 15, 1899).—BAILEY (Florence M.), Handb. Birds W. U. S., 1902, 233, fig. 303.—SWARTH, Pacific Coast Avif., no. 4, 1904, 17 (Huachuca Mts., bet. 5,500-7,500 ft.; habits).—MILLER (W. DeW.), Bull. Am. Mus. N. H., xxii, 1906, 17 (Rancho Baillón and Arroyo del Buéy, Durango).—WILLARD, Condor, xi, 1909, 102 (Ramsey Cañon, Huachuca Mts.; behavior of young bird).—DEARBORN, Pub. 125, Field Mus. N. H., 1907, 99 (near Tecpám, Guatemala, 9,500 ft.).—VISHER, Auk, xxvii, 1910, 282 (Santa Catalina Mts., breeding above 6,000 ft.).—PHILLIPS, Auk, xxviii, 1911, 78 (Rampahuila, Galindo, and Realito, Tamaulipas)
- E[eugenes] fulgens* CABANIS and HEINE, Mus. Hein., iii, 1860, 20 (Mexico).—COUES, Key N. Am. Birds, 2d ed., 1884, 461.—RIDGWAY, Man. N. Am. Birds, 1887, 309.—HARTERT, Das Tierreich, Troch., 1900, 113.
- [Eugenes] fulgens* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 80.—MULSANT Ann. Soc. Linn. Lyon, xxii, 1876, 213.—SHARPE, Hand-list, ii, 1900, 122.
- Clytolæma fulgens* MULSANT and VERREAUX, Classif. Troch., 1866, 59.
- Ornismya rivoli* LESSON, Hist. Nat. Ois.-Mouch., 1829, pp. xxvi, 48, pl. 4 (Mexico; coll. Rivoli); Index Gen. et Synop. Troch., 1832, p. xviii (Temascaltepec).
- Trochilus rivoli* SWAINSON, Birds Brazil, Mex., etc., [1841?], pl. 76.—JARDINE, Nat. Libr., Humming-birds, ii, 1833, 96, pl. 18.
- T[rochilus] papantzin* DE LA LLAVE, Registro Trimestre, ii, no. 5, Jan., 1833, 48 (Mexico; see Richmond, Auk, xvi, 1899, 325).
- (?) *Eugenes viridiceps* BOUCARD, Ann. Soc. Linn. Lyon. (2), xxv, 1878, 55 (Cobán, Guatemala; see Salvin and Godman, Biol. Centr.-Am., Aves, ii, 1892, 329, 330); Liste Ois. récol. Guat., 1878, 45.

### EUGENES SPECTABILIS (Lawrence).

#### ADMIRABLE HUMMING BIRD.

Similar to *E. fulgens*, but larger; adult male with chest dull bronze-green or bronzy (the feathers dull brownish gray beneath surface), the under tail-coverts more greenish or bronzy brownish gray margined with pale buffy; adult female with outer rectrices more narrowly tipped with darker brownish gray.

*Adult male*.—Forehead black (a) becoming dull dusky green in position b; crown and occiput metallic violet-blue (a) changing to violet or royal purple (b); superciliary, supra-auricular, auricular, and suborbital regions and nape velvety black (a) changing to bronze-green or greenish bronze (c); back, scapulars, wing-coverts, rump, and upper tail-coverts rather dull metallic bronze-green, the feathers dusky immediately beneath surface, brownish gray basally; tail dull bronze, more dusky toward edge of inner webs of rectrices; remiges dusky faintly glossed with bronzy purplish, the innermost secondaries with outer web mostly bronze-green; primary coverts dull black faintly glossed with dusky green; a small white spot at posterior angle of eye; throat bright metallic emerald green (a), more bluish green posteriorly, changing to more bluish green in position b, the feathers brownish gray beneath surface, this gray more or less exposed on

upper throat and chin; chest, breast, sides, and flanks rather dull metallic bronze-green (*b*, *c*), changing to nearly black (*a*), passing into dull grayish brown on abdomen; anal tufts grayish white; under tail-coverts dull bronze-green, or bronzy grayish brown, margined with brownish buff; bill blackish or dull black, with mandibular tomia dull flesh color (in life); iris dark brown; feet dusky brown (in life); length (skins), 124–135 (130); wing, 76–81 (77.8); tail, 43.5–48.5 (46.8), middle rectrices, 37.5–41.5 (42.8); culmen, 29–33 (31).<sup>a</sup>

*Adult female*.—Pileum, together with loreal, suborbital and auricular regions, dark sooty or dusky, the first faintly glossed with greenish, at least posteriorly; rest of upper parts as in adult male, but tail duller bronze, the two or three outer rectrices tipped with brownish gray and all becoming dull blackish terminally or subterminally; a conspicuous postocular spot of white; under parts buffy or brownish gray, the feathers of chin and throat conspicuously margined with pale dull grayish buffy (especially on edges) producing a streaked and more or less squamate appearance, the other lower parts with much less distinct paler margins to feathers; sides and flanks mostly bronzy green; anal tufts white, as in adult male; bill, iris, and feet as in adult male; length (skins), 127–141 (135); wing, 68–74.5 (73.5); tail, 36–43.5 (42.3), middle rectrices, 33–40 (37.7); culmen, 35–37.5 (36.3).<sup>a</sup>

Highlands of Costa Rica (Rancho Redondo; Volcán de Irazú; Volcán de Turrialba; Coliblanco; Escazú; Cerro de la Candelaria; La Estrella de Cartago; San Juan; Ojuras de Térraba) and western Panamá (Volcán de Chiriquí).

*Helimaster spectabilis* LAWRENCE, Ann. Lyc. Nat. Hist. N. Y., viii, May, 1867, 472 (Costa Rica; coll. G. N. Lawrence;=female).—SALVIN, Ibis, 1868, 251 (crit.).

[*Trochilus*] *spectabilis* GRAY, Hand-list, i, 1869, 137, no. 1750.

*Eugenes spectabilis* SALVIN, Ibis, 1869, 316 (Volcán de Irazú, Costa Rica); Cat. Birds Brit. Mus., xvi, 1892, 304.—FRANTZIUS, Journ. für Orn., 1869, 315 (Costa Rica).—LAWRENCE, Ann. Lyc. N. Y., x, 1871, 140 ("near San José," Costa Rica; crit.).—MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., ii, livr. 3, 1876, 215; iv, livr. 3, 1878, 206 (crit.).—BOUCARD, Proc. Zool. Soc. Lond., 1878, 68 (Volcán de Irazú, 6,000–8,000 ft.; descr. adult male; crit.; habits); Gen. Hum. Birds, 1895, 297 (Rancho Redondo, Costa Rica).—ELLIOT, Classif. and Synop. Troch., 1879, 61.—ZELEDÓN, Cat. Aves de Costa Rica, 1882, 20; Anal. Mus. Nac. Costa Rica, i, 1887, 121 (Faldas de Irazú).—SHARPE, Suppl. Gould's Mon. Troch., 1885, pl. 13.—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 330.—BANGS, Proc. New Engl. Zool. Club, iii, 1902, 30 (Volcán de Chiriquí, Panamá, 8,000 ft.).—RIDGWAY, Condor, vii, 1905, 157, in text (Coliblanco, Costa Rica, 6,500 ft.).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 539 (Costa Rica, above 6,000 ft.).—FERRY, Pub. 146, Field Mus. N. H., orn. ser., i, no. 6, 1910, 264 (Coliblanco, Costa Rica).

<sup>a</sup> Ten specimens, all from Costa Rica.

- [*Eugenes*] *spectabilis* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 80.—MULSANT, Ann. Soc. Linn. Lyon, xxii, 1876, 213.—SHARPE, Hand-list, ii, 1900, 122.
- E*[*Eugenes*] *spectabilis* RIDGWAY, Man. N. Am. Birds, 1887, 310; Rep. U. S. Nat. Mus. for 1890 (1891), 319 (diagnosis, etc.).—HARTERT, Das Tierreich, Troch., 1900, 113.
- (?) *Eugenes spectabilis chiriquiensis* NEHRKORN, Orn. Monatsb., ix, Sept., 1901, 132 (Chiriquí, Panamá).

### Genus HELIODOXA Gould.

- Heliodoxa* <sup>a</sup> GOULD, Proc. Zool. Soc. Lond., 1849, 95; Introd. Troch., oct. ed., 1861, 74. (Type, *H. jacula* Gould.)
- Leadbeatera* BONAPARTE, Consp. Av., i, 1850, 70. (Type, *L. grata* Bonaparte = *Trochilus leadbeateri* Bourcier and Mulsant.)
- Aspasta* <sup>b</sup> HEINE, Journ. für Orn., xi, May, 1863, 179, in text. (Type, *Trochilus leadbeateri* Bourcier and Mulsant.)
- Hypolia* (not of Ridgway, May 11, 1875) MULSANT, Ann. Soc. Linn. Lyon, xxii, 1876, 212 (Cat. Ois.-Mouch., p. 17). (Type, *Trochilus leadbeateri* Bourcier and Mulsant.)
- Xanthogenys* (typographical error) D'HAMONVILLE, Bull. Soc. Zool. France, viii, 1883, 77. (Type, *Heliodoxa xanthogenys* Salvin.)
- Xanthogenys* D'HAMONVILLE, Bull. Soc. Zool. France, xi, 1886, 318 (correction).

Large Trochilidæ (length about 115–125 mm.) with straight and rather stout bill about as long as head, nostrils completely hidden by appressed, imbricated, frontal feathering, wing three to nearly four times as long as exposed culmen; adult males with tail more than two-thirds as long as wing, forked, the under parts very brilliant metallic green, a blue spot on throat or else forehead and crown brilliant violet-blue; adult females with tail less than two-thirds as long as wing, less deeply forked, the under parts whitish, spotted with bright metallic green.

Bill (unfeathered portion) about as long as head, straight, terete or slightly compressed, rather stout; culmen rounded except at extreme base, where contracted into a rather broad ridge; tomia smooth; mandible with a narrow, rather indistinct, longitudinal median groove. Nasal operculum narrow, straight along edge, wholly covered by the closely appressed and imbricated frontal feathering, which advances over base of maxilla to beyond anterior end of nostril, forming a short obtuse point or antia on each side of culmen. Tarsus slender, feathered, except along posterior side; toes slender, the lateral toes about equal in length and slightly shorter than middle toe, the hallux about as long as lateral toes. Wing three to nearly four times as long as exposed culmen, the outermost primary longest. Tail more than two-thirds as long as wing in adult males.

<sup>a</sup> "Ἥλιος, sol et δόξα, gloria. (Gould.)

<sup>b</sup> "Von ἀσπαστός (Geliebt, lieblich)." (Heine.)



less than two-thirds as long in females, forked in the former, deeply emarginate in the latter, the rectrices broad, rounded or subangular at tip.

*Coloration*.—Above mainly metallic green or bronze-green, the tail blackish (sometimes with middle rectrices greenish or bronzy). Adult males with forehead and crown glittering metallic green or violet-blue, under parts metallic green (very brilliant or glittering anteriorly), the throat sometimes with a small spot of bright metallic blue. Adult females whitish beneath (sometimes buffy posteriorly) spotted with bright metallic green, the lateral rectrices tipped with whitish.

*Range*.—Costa Rica to British Guiana, Bolivia, and Peru, in higher mountains. (Seven species.)

KEY TO THE SPECIES AND SUBSPECIES OF *HELIODOXA*.

- a. Under parts brilliant metallic green (with or without blue or violet spot on throat). (*Adult males*.)
  - b. Pileum glittering metallic emerald green; a blue or violet spot on lower throat. (*Heliodoxa jacula*.)
  - c. Middle rectrices bronze or bronze-green; smaller (wing 72.5–76, averaging 74.3; culmen, 20.5–22.5, averaging 21.3). (Colombia.)  
*Heliodoxa jacula jacula*, adult male (extralimital).<sup>a</sup>
  - œ. Middle rectrices blue-black (rarely slightly glossed with green or bronze-green); larger (wing 73.5–79, averaging more than 75; culmen 23–26, averaging more than 21.5).
  - d. Bill longer (exposed culmen 23–26, averaging 24.8); tail shorter and less deeply forked (49–52, averaging 51.8; middle rectrices 32.5–36, averaging 34); green of pileum rather narrower; under parts of body duller green. (Ecuador.).....*Heliodoxa jacula jamersoni*, adult male (extralimital).<sup>b</sup>

<sup>a</sup> *Heliodoxa jacula* Gould, Proc. Zool. Soc. Lond., 1849, 96 (Bogotá, Colombia; coll. J. Gould); Mon. Troch., pt. ii, 1858, pl. 94; Introd. Troch., oct. ed., 1861, 74; Mulsant and Verreaux, Hist. Nat. Ois.-Mouch., ii, 1875, 202, pl. 46; Elliot, Classif. and Synop. Troch., 1879, 64, part; Salvin, Cat. Birds Brit. Mus., xvi, 1892, 319, part.—*H[eliodoxa] jacula (typica)* Hartert, Das Tierreich, Troch., 1900, 122.—*[Leadbeatera] jacula* Bonaparte, Cons. Av., i, 1850, 70.—*[Coeligena. δ. Leadbeatera] jacula* Reichenbach, Aufz. der Colibr., 1854, 7.—*[Coeligena] jacula* Reichenbach, Troch. Enum., 1855, 4, pl. 688, fig. 4522.—*Chytolæma jacula* Mulsant and Verreaux, Classif. Troch., 1866, 59.—*[Trochilus] jacula* Gray, Hand-list, i, 1869, 137, no. 1752.

<sup>b</sup> *Trochilus jamersoni* Bourcier, Compt. Rend., xxxii, 1851, 187.—*[Coeligena. δ. Leadbeatera] jamersoni* Reichenbach, Aufz. der Colibr., 1854, 7.—*[Leadbeatera] jamesoni* Bonaparte, Compt. Rend., 1854, 251.—*H[eliodoxa] jacula jamersoni* Hartert, Das Tierreich, Troch., 1900, 123.—*Heliodoxa jacula jamersoni* Oberholser, Proc. U. S. Nat. Mus., 1902, 324 (Santo Domingo, w. Ecuador; crit.).—*Heliodoxa jamesoni* Gould, Mon. Troch., ii, 1861, pl. 95; Introd. Troch., oct. ed., 1861, 74; Elliot, Classif. and Synop. Troch., 1879, 65; Salvin, Cat. Birds Brit. Mus., xvi, 1892, 320.—*Heliodoxa jacula jamesoni* Hartert, Kat. Vogelsamml. Mus. Senckenb., 1891, 115.—*Clytolæma jamesoni* Mulsant and Verreaux, Classif. Troch., 1866, 59.

- dd. Bill shorter (exposed culmen 20.5–23, averaging 21.7); tail longer and more deeply forked (53–59, averaging 54.9, middle rectrices 28.5–32.5, averaging 30.2); green of pileum rather broader; under parts of body brighter green. (Costa Rica and western Panamá.)

*Heliodoxa jacula henryi*, adult male (p. 573).

- bb. Pileum brilliant metallic violet or violet-blue; no blue or violet spot on throat. (*Heliodoxa leadbeateri*.)

- c. Bill longer (21–22 mm.); general green color more bluish or less golden. (Coast district of Venezuela to Ecuador, Peru, and Bolivia.)

*Heliodoxa leadbeateri leadbeateri*, adult male (extralimital).<sup>a</sup>

- cc. Bill shorter (18–19 mm.); general green color more golden or bronzy. (Colombia and Venezuela.)...*Heliodoxa leadbeateri parvula*, adult male (extralimital).<sup>b</sup>

- aa. Under parts mixed green and white. (*Adult females*.)

- b. Abdomen white or mostly white (without buff). (*Heliodoxa jacula*.)

- c. Bill larger (exposed culmen 25.5–28, averaging 26.8); under parts of body always (?) with green predominating.

*Heliodoxa jacula jamersoni*, adult female (extralimital).

- cc. Bill smaller (exposed culmen 21.5–24, averaging 22.9); under parts of body usually (?) with white predominating.

*Heliodoxa jacula henryi*, adult female (p. 573).

- bb. Abdomen buff.....*Heliodoxa leadbeateri parvula*, adult female (extralimital).<sup>c</sup>

<sup>a</sup> *T[rochilus] leadbeateri* Bourcier, Rev. Zool., vi, April, 1843, 102 (Caracas, Venezuela); Bourcier and Mulsant, Ann. Sci. Phys. et Nat., etc., Lyon, vi, 1843, 43.—*Heliodoxa leadbeateri* Gould, Mon. Troch., ii, 1860, pl. 97; Elliot, Classif. and Synop. Troch., 1879, 65, part; Salvin, Cat. Birds Brit. Mus., xvi, 1892, 317, part.—*A[spasta] leadbeateri* Heine, Journ. für Orn., 1863, 179.—*Hypolia leadbeateri* Mulsant and Verreaux, Hist. Nat. Ois.-Mouch., ii, livr. 3, 1876, 207.—*Clytolæma leadbeateri* Mulsant and Verreaux, Classif. Troch., 1866, 59.—*H[eliodoxa] leadbeateri (typica)* Hartert, Das Tierreich, Troch., 1900, 122.—(?) *Trochilus otero* Tschudi, Wiegmann's Archiv für Naturg., 1844, i, 298; Fauna Peruana, Aves, 1845–46, 249, pl. 23, fig. 2.—(?) *Leadbeatera otero* Bonaparte, Rev. Zool., 1854, 251; Gould, Introd. Troch., oct. ed., 1861, 75.—(?) *Heliodoxa otero* Gould, Mon. Troch., ii, 1860, pl. 96.—(?) *A[spasta] otero* Heine, Journ. für Orn., 1863, 180.—(?) *Clytolæma leadbeateri*, var. *otero* Mulsant and Verreaux, Classif. Troch., 1866, 59.—(?) *Hypolia otero* Mulsant and Verreaux, Hist. Nat. Ois.-Mouch., ii, 1876, 209.—*Leadbeatera grata* Bonaparte, Consp. Av., i, 1850, 70; Gould, Introd. Troch., oct. ed., 1861, 75.—(?) [*Coeligena*. *δ. Leadbeatera*] *sagitta* Reichenbach, Aufz. der Colibr., 1854, 7.—(?) [*Coeligena*] *sagitta* Reichenbach, Troch. Enum., 1855, 4, pl. 689, fig. 4525, pl. 690, figs. 4527, 4528.—(?) *H[eliodoxa] sagitta* Cabanis and Heine, Mus. Hein., iii, 1860, 22.—[*Coeligena*. *δ. Leadbeatera*] *typica* Reichenbach, Aufz. der Colibr., 1854, 7.—(?) *Leadbeatera splendens* Gould, Introd. Troch., oct. ed., 1861, 74 (Venezuela).—(?) *A[spasta] splendens* Heine, Journ. für Orn., 1863, 180.—(?) *Hypolia splendens* Mulsant and Verreaux, Hist. Nat. Ois.-Mouch., ii, 1876, 211.—(?) *Heliodoxa splendens* Eudes-Deslongchamps, Ann. Mus. Caen, i, 286.

<sup>b</sup> *Heliodoxa leadbeateri parvula* Berlepsch, Journ. für Orn., xxxv, July, 1887, 320 (Bogotá, Colombia; coll. von Berlepsch).—*H[eliodoxa] leadbeateri parvula* Hartert, Das Tierreich, Troch., 1900, 122.

I follow Hartert in recognizing two forms of this species; but, owing to lack of sufficient material, I have no personal opinion as to the number of forms into which the species is divisible.

<sup>c</sup> Females of *H. jacula jacula* and *H. leadbeateri leadbeateri* not seen by me.

**HELIODOXA JACULA HENRYI** (Lawrence).**HENRY'S HUMMING BIRD.**

Similar to *H. j. jacula*,<sup>a</sup> of Colombia, but slightly larger; adult male with general color of upper parts much less bronzy green, middle pair of rectrices blue-black or very (rarely) slightly bronzy, instead of decided bronze or bronze-green, and green of under parts of body much brighter and less bronzy.

*Adult male*.—Pileum very brilliant metallic emerald green, the area thus colored becoming narrower posteriorly; sides of crown and occiput, hindneck, back, scapulars, wing-coverts, and rump deep metallic green (nearly grass green) sometimes tinged with bronze, especially on hindneck or upper tail-coverts; tail slightly glossy blue-black, the middle rectrices sometimes (rarely) slightly bronzy; remiges slate-blackish, faintly glossed with violaceous; sides of head and neck, chin, throat, and chest brilliant metallic emerald green, the breast, abdomen, sides, and flanks similar in color but less brilliant; a transverse spot of bright metallic blue or (usually) violet-blue on center of throat; under tail-coverts rather dark or dull metallic green, the longer ones (at least) narrowly margined with pale grayish or dull whitish; femoral tufts white; bill black; iris dark brown; feet dusky; length (skins), 125–139 (130); wing, 73.5–79 (75.8); tail, 53–59 (54.9); middle rectrices, 28.5–32.5 (30.4); culmen, 20.5–23 (21.7).<sup>b</sup>

*Adult female*.—Above metallic green, sometimes tinged with bronze, especially on hindneck; tail slightly glossy blue-black, the middle rectrices usually more or less bronzy or bronze-greenish, the two or three outer pairs narrowly tipped or terminally margined with white; remiges slate-blackish, faintly glossed with violaceous; a postocular spot of white and a rictal spot or short streak of the same; a black or dusky triangular spot immediately in front of eye; chin, throat, and chest white, with large rounded spots of bright metallic green; the median line of breast and abdomen similar, but abdomen more sparsely spotted, sometimes immaculate; sides and flanks nearly uniform metallic green; femoral tufts white; under tail-coverts dusky grayish glossed (more or less) with green, and margined (more or less broadly) with white; bill, etc., as in adult male; length (skins),

<sup>a</sup> See p. 571.

<sup>b</sup> Eleven specimens.



105-121 (114); wing, 64-68 (66.2); tail, 38-43.5 (40.8), middle rectrices, 28.5-31.5 (30.1); culmen, 21.5-24 (22.9).<sup>a</sup>

*Immature male*.—Similar to the adult male, but pileum dull metallic green (nearly concolor with back, etc.), green of under parts duller, and chin, together with a suborbital space and small postocular spot, light brown or cinnamon.

Highlands of Costa Rica (Tucurríqui; Angostura; Naranjo de Cartago; Birris de Cartago; Volcán de Turrialba; Volcán de Irazú; Coliblanco; Bonilla; Guayabo; Tuís; San José Valley; San Pedro de Mojón; Cariblanco de Sarapiquí; Rancho Redondo; Juan Viñas; La Hondura; El General; Pozo del Pitál; Los Reyes, Santa Maria de Dota) and western Panamá (Volcán de Chiriquí; Boquete; Boquete de Chitra; Calobre; Calovévora; Castillo; Santiago de Verágua; Lomo Lleno; Cordillera de Tolé).

*Heliodoxa jacula* (not of Gould, 1849) SALVIN, Proc. Zool. Soc. Lond., 1867, 154 (Santiago de Verágua and Cordillera de Tolé, Panamá; crit.); 1870, 207 (Calovévora and Boquete de Chitra, Panamá); Ibis, 1869, 283, 316 (Castillo, Panama); Cat. Birds Brit. Mus., xvi, 1892, 319, 665, part (Panamá localities; Tucurríqui, Costa Rica).—LAWRENCE, Ann. Lyc. N. Y., ix, 1868, 122 (Angostura and Tuís, Costa Rica; crit.).—FRANTZIUS, Journ. für Orn., 1869, 315 (Costa Rica).—MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., ii, livr. 3, 1876, 202, part (Verágua, Panamá; Costa Rica).—BOUCARD, Proc. Zool. Soc. Lond., 1878, 69 (Naranjo de Cartago and Volcán de Irazú, Costa Rica; crit.).—ELLIOT, Classif. and Synop. Troch., 1879, 64, part (Costa Rica; Verágua).—ZELEDÓN, Cat. Aves de Costa Rica, 1882, 20; Anal. Mus. Nac. Costa Rica, i, 1887, 121 (Birris de Cartago, Costa Rica).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 339, part (Costa Rica and Panamá localities).—CHERRIE, Anal. Inst. Fisico-Geog. Costa Rica, vi, 1893, 19 (Pozo del Pitál, Costa Rica).

[*Heliodoxa jacula* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 82, part (Verágua; Costa Rica).

*Heliodoxa henryi* LAWRENCE, Ann. Lyc. Nat. Hist. N. Y., viii, 1867, 402 (Angostura, Costa Rica; coll. U. S. Nat. Mus.).

[*Trochilus henryi* GRAY, Hand-list, i, 1869, 137, no. 1753.

*H[eliodoxa] jacula henryi* HARTERT, Das Tierreich, Troch., 1900, 123 (monogr.).

<sup>a</sup> Fifteen specimens.

| Locality.                                                                     | Wing. | Tail. | Middle rectrices. | Exposed culmen. |
|-------------------------------------------------------------------------------|-------|-------|-------------------|-----------------|
| MALES.                                                                        |       |       |                   |                 |
| Ten adult males from Costa Rica.....                                          | 76    | 54.8  | 30.4              | 21.7            |
| One adult male from western Panamá (Verágua).....                             | 74.5  | 55.5  | 28                | 21.5            |
| Three adult males ( <i>H. j. jacula</i> ) from central Colombia (Bogotá)..... | 74.3  | 52    | 30.5              | 21.3            |
| FEMALES.                                                                      |       |       |                   |                 |
| Ten adult females from Costa Rica.....                                        | 65.9  | 40.4  | 29.8              | 22.7            |
| Five adult females from western Panamá.....                                   | 66.8  | 41    | 30.7              | 23.1            |

- Heliodoxa jacula henryi* BANGS, Proc. New Engl. Zool. Club, iii, Jan. 30, 1902, 30 (Boquete and Volcán de Chiriquí, Panamá, 4,000–7,500 ft.).—OBERHOLSER, Proc. U. S. Nat. Mus., xxiv, no. 1258, Jan., 1902, 324, in text (Costa Rica).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 543 (Caribbean slope, 1,000–4,000 ft., San José Valley, and Dota Mts., Costa Rica).—FERRY, Pub. 146, Field Mus. N. H., orn. ser., i, no. 6, 1910, 264 (Coliblanco, Costa Rica).  
 [*Heliodoxa*] *henryi* SHARPE, Hand-list, iii, 1900, 124.  
*Heliodoxa henrici* BOUCARD, Gen. Hum. Birds, 1895, 287 (Navarro de Cartago and Volcán de Irazú; Verágua).  
 (?) *Heliodoxa berlepschi* BOUCARD, The Humming Bird, ii, no. 9, Sept., 1892, 75 (Verágua, Panamá; coll. A. Boucard).

### Genus FLORISUGA Bonaparte.

*Florisuga* BONAPARTE, Conspect. Av., i, 1850, 73. (Type, *Trochilus mellivorus* Linnæus.)

Rather large Trochilidæ (length about 95–110 mm.) with apparently twelve rectrices (the longer upper tail-coverts so elongated and specialized as to simulate the middle rectrices), tail equal to or longer than combined length of head and bill, emarginate, with rectrices broad, firm, and (at least in adult male) nearly truncated at tip, tarsi densely clothed with rather long feathers (especially behind), and abdomen white.

Bill a little longer than head, rather stout, straight, nearly terete; culmen rounded except basally, where narrowly ridged; tomia smooth; maxilla and mandible each with a rather indistinct narrow median lateral groove. Nostril narrow, slit-like, overhung by a broad, tumid, almost wholly feathered operculum, only the edge of which is exposed. Tarsus wholly feathered, the feathering long on posterior portion; middle and inner toes about equal in length, the outer toe slightly shorter; hallux slightly shorter than outer toe; all the toes small and weak, with claws relatively small. Wing about four times as long as exposed culmen, the outermost primary longest. Tail a little more than half (female) as long as wing to nearly three-fifths as long (adult male), emarginate, the rectrices firm, very broad, broadly rounded or (in adult male) nearly truncated at tip; the rectrices apparently 12 in number (at least in adult male) through specialization of the two longest upper coverts, which are as long as and differently colored from the middle rectrices.

*Coloration*.—Adult male with head and neck metallic violet-blue, back, scapulars, rump, and upper tail-coverts metallic green; breast, abdomen, flanks, under tail-coverts, and tail (including middle rectrices) white, the latter narrowly tipped with black; a white line across hindneck. Adult female and young with throat, chest, sides, and under tail-coverts dusky squamated with grayish white, pileum green, like back, etc., and tail dark metallic green crossed at or near

tip by a rather broad band of bluish black (the lateral rectrix mainly the latter color), and (in unworn plumage) with a narrow terminal margin of white.

*Range*.—Southern Mexico to Amazon Valley. (Monotypic.)

**FLORISUGA MELLIVORA (Linnæus).**

**JACOBIN HUMMING BIRD.**

*Adult male*.—Head, neck, and chest uniform dark metallic blue or violet-blue, becoming more greenish blue on hindneck and (sometimes) on lower portion of chest; a pure white bar or crescent across lower part of hindneck or extreme upper back, this sometimes obsolete (concealed);<sup>a</sup> back, scapulars, wing-coverts, rump, and upper tail-coverts metallic green, bronze-green, or bronze; tail white, the rectrices narrowly tipped (or terminally margined) and usually edged (more or less) with black;<sup>b</sup> remiges slate-blackish, faintly glossed with violaceous; breast, abdomen, flanks, and under tail-coverts immaculate pure white; sides metallic green, bronze-green, or bronze, this color invading sides of breast, where sometimes extending entirely across the upper portion; bill dull black; iris dark brown; feet dusky; length (skins), 95–124 (118); wing, 62–71.5 (68.4); tail, 32–43 (38.1); culmen, 16.5–22 (19.3).<sup>c</sup>

*Adult female*.—Above metallic bronze-green or greenish bronze, slightly duller or darker on pileum; tail usually more bluish green (sometimes decidedly bluish), the rectrices broadly blackish subterminally and tipped or terminally margined with white, this broad and conspicuous on outermost pair but reduced to a narrow edging on middle pair, the outer web of outer pair broadly edged with grayish white or pale gray basally; remiges slate-blackish or dusky slate, faintly glossed with violaceous; chin white (at least in part); throat and chest with feathers dusky centrally, broadly margined with white (producing a scaled effect), the dark central spots usually more or less glossed with metallic green or bluish green, especially on chest; sides of breast and sides mottled or squamated with white and bronze or bronze-greenish; median portion of breast, abdomen, and flanks immaculate white; under tail-coverts dusky grayish glossed with bronze-greenish basally, slightly glossy blue-black subterminally, and tipped or terminally margined (broadly)

<sup>a</sup> This white marking varies greatly in development, even in specimens from the same locality; sometimes it is entirely concealed, the tips of the feathers being metallic green; again it is broad and conspicuous. The "make" of the skin has much to do with its apparent development, since specimens with the head crowded close to the body have the white mark entirely covered or obliterated.

<sup>b</sup> The middle rectrices, which are white, black-tipped, like the rest, are almost wholly covered and hidden by the elongated upper tail-coverts.

<sup>c</sup> Forty-six specimens.



with white; bill, etc., as in adult male; length (skins), 94–109 (100); wing, 62–70 (65.2); tail, 31–37 (34.1); culmen, 17.5–22 (19).<sup>a</sup>

*Immature male*.—Essentially like adult male but coloration duller; middle rectrices with only basal portion white, the terminal half or more being dusky dull metallic greenish or bronzy broadly tipped with black; rictal region (more or less extensively) light buffy brown or cinnamon.<sup>b</sup>

Southeastern Mexico, in States of Vera Cruz (Orizaba) and Oaxaca (Lana, Choapám) and southward through Guatemala (Guatemala City; Choctúm; near Petén), British Honduras (Belize; forest near Manatee Lagoon), Honduras (San Pedro), Nicaragua (Greytown; Río San Juan; Chontales), Costa Rica (San Pedro; Guápiles; Bonilla; El Hogár; Turrialba; Carrillo; La Vijágua; El General; Bebedero; Pozo del Pitál; Pozo Azul de Pirrís; Boruca), Panamá (Divala; Volcán de Chiriquí; Cordillera de Tolé; Cordillera del Chuco; Santiago de Verágua; Lion Hill; Paraiso), Colombia (Don Diego, Sierra Nevada, Cacagualito, Bonda, Don Amo, and Minca, Santa Marta; Bogotá;

<sup>a</sup> Sixteen specimens.

| Locality.                                                               | Wing. | Tail. | Ex-<br>posed<br>culmen. |
|-------------------------------------------------------------------------|-------|-------|-------------------------|
| MALES.                                                                  |       |       |                         |
| Three adult males from Guatemala.....                                   | 69.3  | 39.5  | 18.2                    |
| Five adult males from British Honduras.....                             | 67.8  | 36.4  | 20.1                    |
| One adult male from Nicaragua.....                                      | 67    | 36    | 18.5                    |
| Ten adult males from Costa Rica.....                                    | 67.5  | 37.4  | 17.8                    |
| Four adult males from Panamá.....                                       | 67.7  | 37    | 19.2                    |
| Five adult males from northeastern Colombia (Santa Marta district)..... | 68.4  | 37.7  | 20.9                    |
| Five adult males from central Colombia (Bogotá).....                    | 69.2  | 39    | 19.7                    |
| Two adult males from Ecuador.....                                       | 69.2  | 40.7  | 19.7                    |
| Four adult males from eastern Peru.....                                 | 69.7  | 40.2  | 19.2                    |
| One adult male from British Guiana.....                                 | 66    | ..... | 20                      |
| Six adult males from Trinidad.....                                      | 68.9  | 37.9  | 20                      |
| Four adult males ( <i>F. m. tobagensis</i> c) from Tobago.....          | 73.1  | 44.5  | 22.7                    |
| FEMALES.                                                                |       |       |                         |
| Ten adult females from Costa Rica.....                                  | 64.6  | 37.4  | 18.5                    |
| Two adult females from Panamá.....                                      | 64    | 32    | 18.7                    |
| Two adult females from Santa Marta district, Colombia.....              | 68.7  | 35    | 21.5                    |
| One adult female from Ecuador.....                                      | 66.5  | 33    | 20                      |
| One adult female from Cayenne.....                                      | 64    | 31    | 19.5                    |
| One adult female ( <i>F. m. tobagensis</i> ) from Tobago.....           | 70.5  | 38.5  | .....                   |

<sup>b</sup> Younger specimens have the dark dull metallic blue of throat and chest confined to a median stripe, margined along each side by a narrower, ill-defined stripe of pale brownish, and there is a stripe of pale buff or cinnamon along middle of back and rump.

<sup>c</sup> *Florisuga mellivora tobagensis* Ridgway, Proc. Biol. Soc. Wash., xxiii, April 19.. 1910, 55 (Tobago; coll. U. S. Nat. Mus.).

Remédios, Antioquía; Las Cruces), Ecuador (Báeza; Quito; Sarayacu; Nanegál; Chimbo; Parambo), Venezuela (Yauca, Caura; Nericagua; Munduapo; Suapuré; La Pricion), Trinidad, Tobago,<sup>a</sup> Aruba, Carriacou, British Guiana (Demerara; Merumé Mountains; Atapuroni River), and Cayenne to Brazil (Pernambuco; Pará; Rio Negro; Humaytha; Borba; Arumatheua, Tocantins; Rio de Janeiro, and Peru (Pebas; Iquitos; Xeberos; Chamicuros; Yurimaguas; Rio Javari; Callacate).

[*Trochilus*] *mellivorus* LINNÆUS, Syst. Nat., ed. 10, i, 1758, 121; ed. 12, i, 1766, 193 (based on *White-bellied Humming Bird*, *Avis mellivora*, ventre albo Edwards, Nat. Hist., i, pl. 35, upper fig.).—GMELIN, Syst. Nat., i, pt. 1, 1788, 499.—LATHAM, Index Orn., i, 1790, 310.

*Trochilus mellivorus* AUDEBERT and VIEILLOT, Ois. Dorés, i, 1801, 55, pl. 23 (Cayenne; Guiana).—TEMMINCK, Cat. Syst., 1807, 82.—VIEILLOT, Nouv. Dict. d'Hist. Nat., vii, 1817, 360.—VIGORS, Zool. Beechey's Voy., 1839, 25 (Rio Janeiro, Brazil; habits; food).—CABANIS, in Schomburgk's Reis. Brit. Guiana, iii, 1848, 706.—BURMEISTER, Syst. Ueb. Th. Bras., ii, 1856, 339.

[*Trochilus*] *mellivorus* VIEILLOT, Tabl. Enc. Méth., ii, 1822, 562.

*Ornismya mellivora* LESSON, Hist. Nat. Ois.-Mouch., 1829, pp. xxiii, 90, pls. 21, 22; Index Gen. et Synop. Troch., 1832, p. xx (Guiana; Brazil; "Martinique").

[*Florisuga*] *mellivorus* BONAPARTE, Cons. Av., i, 1850, 73; Rev. et Mag. de Zool., 1854, 253.

[*Florisuga*] *mellivora* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 83.—MULSANT, Ann. Soc. Linn. Lyon, xxii, 1876, 212.—SHARPE, Hand-list, ii, 1900, 102.

*Florisuga mellivora* GOULD, Mon. Troch., pt. ii, 1851; vol. ii, 1861, pl. 113; Intro. Troch., oct. ed., 1861, 80.—REICHENBACH, Aufz. der Colibr., 1854, 14; Troch. Enum., 1855, 12.—MOORE, Proc. Zool. Soc. Lond., 1859, 53 (Belize, Brit. Honduras).—SCLATER and SALVIN, Ibis, 1859, 128 (Guatemala); Proc. Zool. Soc. Lond., 1864, 365 (Lion Hill, Panamá); 1867, 584 (Pará and Cobati, Rio Negro, Brazil); 1868, 628 (Venezuela); 1870, 837 (San Pedro, Honduras); 1873, 287 (Xeberos, Chyavetas, Chamicuros, and Pebas, e. Peru); 1879, 529 (Remédios, Antioquía, Colombia).—SCLATER, Proc. Zool. Soc. Lond., 1860, 95 (Nanegál, Ecuador); Cat. Am. Birds, 1862, 295 (Cayenne).—TAYLOR, Ibis, 1863, 91 (Trinidad).—MULSANT and VERREAUX, Classif. Troch., 1866, 47; Hist. Nat. Ois.-Mouch., ii, livr. 3, 1876, 176 (n. Brazil to e. Peru, Ecuador, and Mexico); iv, livr. 4, 1878, 204 (synonymy).—SALVIN, Proc. Zool. Soc. Lond., 1867, 155 (Cordillera de Tolé and Santiago de Verágua, Panamá); Ibis, 1872, 319 (Chontales, Nicaragua); Cat. Birds Brit. Mus., xvi, 1892, 329, 665 (Belize, etc., Brit. Honduras; Choctúm, Guatemala; Chontales, Nicaragua; Costa Rica; Volcán de Chiriquí, Cordillera de Tolé, Santiago, Lion Hill, and Paraiso, Panamá; etc.).—LAWRENCE, Ann. Lyc. N. Y., vii, 1862, 292 (Lion Hill, Panamá); ix, 1868, 122 (Costa Rica); Proc. Bost. Soc. N. H., xiv, 1871, 284 ("Tres Marias," error; see Berlepsch, Proc. U. S. Nat. Mus., xi, 1888, 561); Mem. Bost. Soc. N. H., ii, 1874, 291 ("Tres Marias").—LAYARD, Ibis, 1863, 388 (Pará, Brazil).—PELZELN, Orn. Bras., i. Abth., 1868, 30; iv. Abth., 1870, 481.—FRANTZIUS, Journ. für Orn., 1869, 315 (Costa Rica).—BOUCARD, Notes Troch. du Mex., 1875, 2 (Lana, Choapám, Oaxaca; Guate-

<sup>a</sup> The Tobago bird has, however, been separated on account of its much larger size. (*Florisuga mellivora tobagensis* Ridgway, Proc. Biol. Soc. Wash., xxiii, April 19, 1910, 55 (Tobago; coll. U. S. Nat. Mus.).

- mala; habits; etc.); Liste Ois. récol. Guat., 1878, 45; Gen. Hum. Birds, 1895, 338.—ELLIOT, Classif. and Synop. Troch., 1879, 48.—TACZANOWSKI, Proc. Zool. Soc. Lond., 1880, 304 (Callacate, n. Peru); Orn. du Pérou, i, 1884, 297.—SUMICHRAST, La Naturaleza, v, 1881, 250 (Orizaba, Vera Cruz).—ZELEDÓN, Cat. Aves de Costa Rica, 1882, 20; Anal. Mus. Nac. Costa Rica, i, 1887, 121 (Panamá).—TACZANOWSKI and BERLEPSCH, Proc. Zool. Soc. Lond., 1883, 566 (Chimbo, w. Ecuador).—BERLEPSCH, Journ. für Orn., 1887, 317 (Bogotá, Colombia; crit.); 1889, 305 (Yurimaguas, e. Peru); Zeitschr. Orn., 1887, 186 (Bogotá); Proc. U. S. Nat. Mus., xi, 1888, 561 (crit. as to alleged Tres Marias spec.).—SIMON, Mém. Soc. Zool. France, ii, 1889, 220 (San Estéban, Venezuela; crit.).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 340.—RICHMOND, Proc. U. S. Nat. Mus., xvi, 1893, 517 (near Greytown, Nicaragua).—CHERRIE, Anal. Inst. Físico-Geog. Costa Rica, vi, 1893, 19 (Pozo del Pitál, Costa Rica).—CHAPMAN, Bull. Am. Mus. N. H., vi, 1894, 56 (Trinidad; crit.).—BANGS, Proc. Biol. Soc. Wash., xii, 1898, 135 (Santa Marta, Colombia).—HARTERT, Novit. Zool., v, 1898, 494 (Paramba, n. w. Ecuador).—DALMAS, Soc. Zool. France, xiii, 1900, 142 (Tobago; crit.).—ALLEN, Bull. Am. Mus. N. H., xiii, 1900, 138 (Bonda, etc., Santa Marta, Colombia).—SIMON and DALMAS, Ornith., xi, 1901, 209 (Yacura, Caura, Venezuela), 218 (Las Cruces, w. Colombia).—BERLEPSCH and HARTERT, Novit. Zool., ix, 1902, 82 (Nericagua, Munduapo, Suapuré, La Pricion, etc., Venezuela).—OBERHOLSER, Proc. U. S. Nat. Mus., xxiv, 1902, 315 (Báeza, e. Ecuador).—CLARK (A. H.), Proc. Bost. Soc. N. H., xxxii, 1905, 275 (Carriacou, Lesser Antilles).—HELLMAYR, Novit. Zool., xiii, 1906, 375 (Pará); xiv, 1907, 395 (Humaytha and Borba, Rio Madeira, w. Brazil).—SNETHLAGE, Journ. für Orn., 1908, 533 (Arumatheua, Tocantins, Brazil).—BERLEPSCH, Novit. Zool., xv, 1908, 264 (Cayenne).—CORY, Pub. 137, Field Mus. N. H., 1909, 200 (Aruba; crit.).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 522 (Costa Rica).
- F[lorisuga] mellivora* CABANIS and HEINE, Mus. Hein., iii, 1860, 29 (Guiana).—HARTERT, Das Tierreich, Troch., 1900, 35.
- F[lorisuga] m[ellivora] mellivora* RIDGWAY, Proc. Biol. Soc. Wash., xxiii, Apr. 19, 1910, 55, in text.
- Lampornis mellivora* JARDINE, Nat. Libr., Humming-Birds, ii, 1833, 155.
- T[opaza] mellivora* GRAY, Gen. Birds, i, 1848, 110.
- Topaza mellivora* LÉOTAUD, Ois. Trinidad, 1866, 141.
- [*Topaza*] *mellivora* GRAY, Hand-list, i, 1869, 134, no. 1721.
- Mellisuga mellivora* SCLATER and SALVIN, Ibis, 1880, 171 (Minca, Santa Marta, Colombia, 2,000 ft.).
- Mellisuga surinamensis* STEPHENS, Shaw's Gen. Zool., xiv, pt. 1, 1826, 243 (based on "*Trochilus mellivorus* Shaw, v, viii, p. 320").
- (?) [*Trochilus*] *fimbriatus* LINNÆUS, Syst. Nat., ed. 12, i, 1766, 193 (based on *Mellisuga cayennensis gutture naevia* Brisson, Orn., iii, 706; etc.).—GMELIN, Syst. Nat., i, pt. 1, 1788, 493.—LATHAM, Index Orn., i, 1790, 312.
- T[opaza] fimbriata* GRAY, Gen. Birds, i, Dec., 1848, 110.
- Trochilus* (———?) *flabelliferus* GOULD, Proc. Zool. Soc. Lond., July, 1846, 45 (Mexico; coll. J. Gould).
- T[opaza] flabellifera* GRAY, Gen. Birds, i, Dec., 1848, 110.
- [*Topaza*] *flabellifera* GRAY, Hand-list, i, 1869, 134, no. 1721.
- [*Florisuga*] *flabelliferus* BONAPARTE, Consp. Av., i, 1850, 74.
- [*Florisuga*] *flabellifera* BONAPARTE, Rev. et Mag. de Zool., 1854, 253.
- Florisuga flabellifera* GOULD, Mon. Troch., pt. ii, Nov., 1857; vol. ii, 1861, pl. 114; Introd. Troch., oct. ed., 1861, 81.—REICHENBACH, Aufz. der Colibr., 1854, 14; Troch. Enum., 1855, 12.—SCLATER, Cat. Am. Birds, 1862, 295.—MULSANT and VERREAUX, Classif. Troch., 1866, 47.



- F[lorisuga] flabellifera* CABANIS and HEINE, Mus. Hein., iii, 1860, 29, footnote.  
*[Florisuga mellivora]* var. *flabellifera* MULSANT, Ann. Soc. Linn. Lyon, n. s., xxii, 1876, 212.
- Florisuga salliei* BOUCARD, The Hum. Bird, i, no. 3, Mar. 1, 1891, 18 ("South Mexico;" coll. A. Boucard); Gen. Hum. Birds, 1895, 341.
- Florisuga salliei* HARTERT, Ibis, 1897, 434, in text (crit.; = "golden" variety of *F. mellivora*).
- F[lorisuga] guianensis* BOUCARD, Genera Hum. Bird, Sept., 1895, 340, in text (Demerara and Atapuroni R., Brit. Guiana; coll. A. Boucard).—HARTERT, Ibis, 1897, 434, in text (crit.).
- F[lorisuga] peruviana* BOUCARD, Genera Hum. Bird, Sept., 1895, 340, in text (Pebas, e. Peru; coll. A. Boucard).—HARTERT, Ibis, 1897, 434, in text (crit.).
- Trochilus mellivorus varius* AUDEBERT and VIEILLOT, Ois. Dorés, i, 1801, 56, pl. 24 (Cayenne and Guiana; =immature male).

### Genus MICROCHERA Gould.

- Microchera* <sup>a</sup> GOULD, Mon. Troch., pt. xvi, Sept., 1858 (vol. ii, 1861), text to pl. 116; Introd. Troch., oct. ed., 1861, 82. (Type, *Mellisuga albo-coronata* Lawrence.)

Very small Trochilidæ (length about 60–70 mm.) with the straight bill shorter than head, wing about four times as long as exposed culmen, tail less than half as long as wing, with rectrices (except middle pair) white basally, the adult males with general color plain dark metallic purplish relieved by a pure white pileum.

Bill shorter than head, straight, rather slender, terete or slightly compressed; culmen rounded except basally, where contracted into a narrow ridge; tomia smooth; mandible with the usual lateral median groove. Nasal operculum narrow, completely hidden by the appressed frontal feathering, which extends forward considerably beyond anterior end of nostrils, forming a single broad, rounded, or truncate antia on base of culmen. Tarsus feathered, except on inner side; inner and middle toes about equal in length, the outer very slightly shorter. Wing about four times as long as exposed culmen, the outermost primary longest, normal in shape. Tail a little less than half as long as wing, slightly double-rounded, the rectrices broadly rounded at tip.

*Coloration*.—Adult males with whole pileum satiny white; rest of plumage dark metallic blackish purple or coppery purple, the chin and throat bronzy blackish (whole under parts, except under tail-coverts, blackish in one species), the under tail-coverts and basal portion of tail (except middle rectrices) white; adult females metallic bronze-green above, including pileum, the middle rectrices more bronzy, the under parts wholly grayish white, the tail as in adult male, but lateral rectrices tipped with white.

*Range*.—Highlands of Nicaragua, Costa Rica, and western Panamá. (Two species.)

<sup>a</sup> "μικρός, parvus et χήρα, vidua."

## KEY TO THE SPECIES OF MICROCHERA.

a. Under parts purplish black or dark metallic reddish purple; pileum white. (*Adult males.*)

b. Under parts and anterior upper parts purplish black; tail more extensively white basally. (Western Panamá.)

*Microchera albo-coronata*, adult male (p. 581).

bb. Under parts and upper parts (except pileum) metallic reddish purple; tail less extensively white basally. (Costa Rica.)

*Microchera parvirostris*, adult male (p. 582).

aa. Under parts very pale gray or grayish white; pileum metallic greenish.

b. Lateral rectrices with basal half white and white tip broader.

*Microchera albo-coronata*, adult female (p. 581).

bb. Lateral rectrices mostly black (only the extreme base whitish or grayish) and white tip narrower.....*Microchera parvirostris*, adult female (p. 582).

**MICROCHERA ALBO-CORONATA** (Lawrence).**VERAGUAN SNOW-CAP.**

*Adult male*.—Entire pileum immaculate satiny white, the feathers distinctly outlined, producing a squamate or imbricated effect; nape and hindneck purplish black, passing into very dark metallic reddish coppery purple on back, scapulars, and wing-coverts, this into much brighter coppery purple on rump and upper tail-coverts; middle pair of rectrices dark coppery bronze; other rectrices white for basal two-thirds (approximately), black terminally, the outermost narrowly margined at tip with grayish; remiges dusky faintly glossed with purplish; under parts (except under tail-coverts) and sides of head black, glossed with metallic reddish purple when viewed from behind; under tail-coverts white; bill black; iris dark brown; feet dusky; length (skins), 61–63 (62); wing, 39–41.5 (40.5); tail, 20–20.5 (20.2); culmen, 11–11.5 (11.2).<sup>a</sup>

*Adult female*.—Pileum and hindneck dark metallic green; rest of upper parts brighter green, passing into bronze on upper tail-coverts and middle rectrices; other rectrices white for basal half and black terminally or subterminally, the two outermost pairs broadly tipped with white; remiges as in adult male; under parts plain pale gray anteriorly, fading into white posteriorly; bill, etc., as in adult male; length (skin), 66; wing, 40.5; tail, 19.5; culmen (bill broken).<sup>b</sup>

*Immature male*.—Similar to the adult female, but pileum bordered laterally by a superciliary stripe of white (forehead sometimes grayish), and under parts mixed more or less (according to age) with blotches or areas of purplish black.

Western Panamá (Belén, Cordillera del Chucu, and Santiago, Veragua); Costa Rica?

<sup>a</sup> Three specimens.

<sup>b</sup> One specimen.

- Mellisuga albo-coronata* LAWRENCE, Ann. Lyc. Nat. Hist. N. Y., vi, 1855, 137, pl. 4 (Belén, Veragua, Panamá; coll. G. N. Lawrence).—SALVIN, Proc. Zool. Soc. Lond.; 1870, 207 (Cordillera del Chucu, Panamá).
- Microchera albocoronata* GOULD, Mon. Troch., ii, pt. xvi, 1858, pl. 116; Introd. Troch., oct. ed., 1861, 82.—LAWRENCE, Ann. Lyc. N. Y., ix, 1868, 122 ("Costa Rica").—SALVIN, Proc. Zool. Soc. Lond., 1867, 154 (Santiago, Veragua; crit.); 1870, 207 (Cordillera del Chucu, Veragua); Cat. Birds Brit. Mus., xvi, 1892, 66.—FRANTZIUS, Journ. für Orn., 1869, 315 ("Costa Rica").—MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., ii, livr. 4, 1876, pl. 32; iii, livr. 2, 1876, 134, pl. 81.—ELLIOT, Classif. and Synop. Troch., 1879, 104.—ZELEDÓN, Cat. Aves de Costa Rica, 1882, 20; Anal. Mus. Nac. Costa Rica, i, 1887, 121.—RIDGWAY, Rep. U. S. Nat. Mus., for 1890 (1891), pl. 34, fig. 2.—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 268.—BOUCARD, The Hum. Bird, ii, 1892, 74 (Veragua); Gen. Hum. Birds, 1892, 51.
- [*Microchera*] *albo-coronata* SLATER and SALVIN, Nom. Av. Neotr., 1873, 83.
- [*Microchera*] *albocoronata* MULSANT, Ann. Soc. Linn. Lyon, n. s., xxii, 1876, 220.
- [*Microchera*] *albocoronata* HARTERT, Das Tierreich, Troch., 1900, 215 (monogr.).
- [*Microchera*] *albicoronata* SHARPE, Hand-list, ii, 1900, 143.
- Chrysolampis albocoronata* MULSANT and VERREAUX, Classif. Troch., 1865, 57.
- [*Topaza*] *albocoronata* GRAY, Hand-list, i, 1869, 134, no. 1724.

### MICROCHERA PARVIROSTRIS (Lawrence).

#### COSTA RICAN SNOW-CAP.

Similar to *M. albocoronata*, but white at base of lateral rectrices more restricted and less sharply defined, the adult male with the general color brighter coppery purple.

*Adult male*.—Forehead and crown wholly pure silky white; rest of upper parts (except tail, remiges, and primary coverts) metallic coppery purple;<sup>a</sup> middle rectrices bronze or coppery bronze, the other rectrices with basal half or more pale gray or grayish white (shafts pure white), the terminal portion blackish, more or less glossed with bronzy, and (except in worn plumage) with a narrow terminal margin of white; chin and throat dull dusky greenish bronze; under tail-coverts white; rest of under parts rich dark coppery purple; remiges purplish dusky, the primary coverts similar but darker; bill black; iris dark brown; feet dusky; length (skins), 62–70 (66); wing, 41–43 (42); tail, 19–21 (20.1); exposed culmen, 11–12 (11.6).<sup>b</sup>

*Adult female*.—Above, including forehead and crown, metallic bronzy green; tail and remiges as in the adult male but lateral rectrices broadly tipped with white; lores and auricular region grayish; under parts grayish white, tinged with pale brownish gray laterally; bill, etc., as in adult male; length (skins), 61–70 (65); wing, 39–42 (40.3); tail, 17.5–20.5 (19.3); exposed culmen, 11–13 (12.1).<sup>b</sup>

<sup>a</sup> Nearest pansy purple.

<sup>b</sup> Ten specimens.



*Immature male*.—Similar to the adult female but upper parts more bronzy (intermixed with coppery feathers in older specimens); tail as in adult male; median under parts coppery purple (more or less extensively).

Caribbean slope of Costa Rica (Angostura; Tucurríqui; Turrialba; Bonilla; Carrillo; Río Súcio; Puerto Limón; La Balsa; La Vijagua) and Nicaragua (Chontales; Matagalpa).

*Panychlora parvirostris* LAWRENCE, Proc. Ac. Nat. Sci. Philad., 1865, 39 (Angostura, Costa Rica; coll. U. S. Nat. Mus.).

*Microchera parvirostris* SALVIN, Proc. Zool. Soc. Lond., 1867, 154, in text (Tucurríqui, Costa Rica; crit.); Ibis, 1872, 313, 319 (Chontales, Nicaragua; crit.); 1892, 327 (Matagalpa, Nicaragua); Cat. Birds Brit. Mus., xvi, 1892, 67, 656 (La Balsa, Costa Rica, etc.).—LAWRENCE, Ann. Lyc. N. Y., ix, 1868, 122 (Angostura, Costa Rica; descr. adult male).—FRANTZIUS, Journ. für Orn., 1869, 315 (Costa Rica).—MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., iii, livr. 2, 1876, 136.—BOUCARD, Proc. Zool. Soc. Lond., 1878, 69 (Costa Rica); Gen. Hum. Bird, 1892, 51 (Chontales, Nicaragua; Limón, Costa Rica).—ELLIOT, Classif. and Synop. Troch., 1879, 104.—GOULD, Suppl. Troch., 1880, pl. 30.—ZELEDÓN, Cat. Aves de Costa Rica, 1882, 20; Anal. Mus. Nac. Costa Rica, i, 1887, 121 (Río Súcio, Costa Rica).—RIDGWAY, Proc. U. S. Nat. Mus., vi, 1884, 415 (Río Súcio, Costa Rica); Condor, vii, 1905, 157, in text (Bonilla, Costa Rica).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 269.—CARRIKER, Ann. Carnegie Mus., vi, 1910, 551 (Caribbean slope of Costa Rica, 1,000–3,000 ft.; descr. nest).

[*Microchera*] *parvirostris* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 83.—MULSANT, Ann. Soc. Linn. Lyon, n. s., xxii, 1876, 221.—SHARPE, Hand-list, ii, 1900, 143.

[*Microchera*] *parvirostris* HARTERT, Das Tierreich, Troch., 1900, 216 (monogr.).

[*Topaza*] *parvirostris* GRAY, Hand-list, i, 1869, 134, no. 1725.

#### Genus MELLISUGA Brisson.

*Mellisuga* BRISSON, Orn., iii, 1760, 694. (Type, *Trochilus minimus* Linnæus.)

*Dyrinia* MULSANT and VERREAUX, Mém. Soc. Imp. Sci. Nat. Cherb., xii (sér. 2, ii), 1866, 232 (Classif. Troch., 1866, 88). (Type, *Trochilus minimus* Linnæus.)

Very small Trochilidæ (length about 55–60 mm.<sup>a</sup>) with bill shorter than head, straight, wing more than three times as long as exposed culmen, tail about half as long as wing, emarginate in adult male, rounded in female and young, the adult male without brilliant coloring on throat, which is dull whitish or grayish in both sexes.

Bill shorter than head, straight, relatively rather stout, broader than deep basally; culmen rounded except basally, where contracted into a rather distinct ridge; tomia smooth; mandible with the usual lateral median groove. Nasal operculum rather broad, convex, and tumid, nude, but hidden by appressed frontal feathering, which anteriorly extends about as far as anterior end of nostrils, forming a short obtuse point or antia on each side of culmen. Tarsus feathered, except on posterior side; lateral toes about equal in length,

<sup>a</sup> With a single exception (*Calypte helenæ*) the smallest of birds.

slightly shorter than middle toe. Wing decidedly more than three times as long as exposed culmen, the outermost primary longest, normal in shape. Tail about half as long as wing, in the adult male emarginated, in adult female and young rounded, the rectrices (in both sexes) rounded at tip.

*Coloration*.—Above rather dark metallic green or bronze green, the tail blackish; beneath dull whitish or grayish, the under parts of body, especially laterally somewhat dusky; adult males without white on rectrices, females and young with lateral rectrices tipped with white.

*Range*.—Islands of Haiti and Jamaica, Greater Antilles. (Two species.)

#### KEY TO THE SPECIES OF MELLISUGA.

- a. Tail deeply emarginate, the lateral rectrices wholly black. (*Adult males*.)
  - b. Much paler, the chest and median portion of breast and abdomen (broadly) white or grayish white, the upper parts, including rump and upper tail-coverts, clear metallic green; wing, 35.5–38 (36.5); tail, 18–19.5 (18.7), middle rectrices, 14–15.5 (15). (Jamaica.).....**Mellisuga minima**, adult male (p. 584).
  - bb. Much darker, the chest and median line of breast and abdomen (narrowly) light gray, the upper parts dark and dull metallic green, passing into blackish on rump and upper tail-coverts; wing, 34–36.5 (35.1); tail, 16.5–19 (17.9), middle rectrices, 12–14 (12.8). (Haiti.)
    - Mellisuga catharinæ**, adult male (p. 586).
- aa. Tail rounded or double-rounded, the lateral rectrices broadly tipped with white. (*Adult females and young males*.)
  - b. Lighter or more bronzy green above, clearer white beneath; wing, 36–39 (37.8); tail, 19–21 (19.9); exposed culmen, 10–11.5 (11).
    - Mellisuga minima**, adult female (p. 585).
  - bb. Darker or more bluish green above, more grayish white or pale gray below; wing, 36–40 (37.1); tail, 18.5–21 (19.5); exposed culmen, 10–11.5 (10.8).
    - Mellisuga catharinæ**, adult female (p. 586).

#### MELLISUGA MINIMA (Linnæus).

##### VERVAIN HUMMING BIRD.

*Adult male*.—Above rather dull metallic bronze-green or greenish bronze, usually more or less darker or duller on pileum; middle pair of rectrices metallic bronze-green or greenish bronze, darker (sometimes blackish) subterminally; rest of tail black, faintly glossed with bluish or greenish; remiges dusky, faintly glossed with violet or bluish; under parts dull white (purer white on chest and abdomen), the sides and flanks metallic bronze-green or greenish bronze; chin (occasionally throat also) sometimes flecked with grayish or dull bronzy, and under tail-coverts sometimes with a central spot (more or less large) of grayish bronzy; bill dull black; iris dark brown; feet dusky; length (skins), 57–64 (61); wing, 35.5–38 (36.5); tail, 18–19.5 (18.7), middle rectrices, 14–15.5 (15); exposed culmen, 10–10.5 (10.1).<sup>a</sup>

<sup>a</sup> Seven specimens.

*Adult female*.—Similar to the adult male, but two lateral rectrices (on each side) broadly tipped with white, the third usually with a small white or grayish white terminal spot; length (skins), 59–68 (63); wing, 36–39 (37.8); tail, 19–21 (19.9); exposed culmen, 10–11.5 (11).<sup>a</sup>

Island of Jamaica (Kingston; Spanishtown; Priestmans River; Port Henderson; Hope Gardens).

[*Trochilus*] *minimus* LINNÆUS, Syst. Nat., ed. 10, i, 1758, 121 (based on *Mellisuga avis minima* Sloane, Jamaica, 307, pl. 364, fig. 1; *Polytmus minimus variegatus* Brown, Jamaica, 475, pl. 364, fig. 1; *Least Humming Bird* Edwards, Nat. Hist., i, pl. 105); ed. 12, i, 1766, 193.—GMELIN, Syst. Nat., i, pt. 1, 1788, 500.—LATHAM, Index Orn., i, 1790, 320.

(?) *Trochilus minimus* AUDEBERT and VIEILLOT, Ois. Dorés, i, 1802, 113, pl. 64, part.—VIEILLOT, Nouv. Dict. d'Hist. Nat., vii, 1817, 369, part.—LESSON, Index Gen. et Synop. Troch., 1832, p. xxvii.

*Trochilus* *minimus* VIEILLOT, Tab. Enc. Meth., ii, 1822, 568, part.

*Ornismya minima* LESSON, Hist. Nat. Ois.-Mouch., 1829, pp. xxxii, 213.

[*Mellisuga*] *minimus* BONAPARTE, Consp. Av., i, 1850, 81, part ("Antilles").

*Mellisuga minima* REICHENBACH, Aufz. der Colibr., 1854, 6, part; Troch. Enum., 1855, 3, pl. 680, fig. 4490.—GOULD, Mon. Troch., iii, pt. ii, Nov., 1851 (vol. iii, 1861, pl. 133), part; Introd. Troch., oct. ed., 1861, 87, part.—SCLATER, Cat. Am. Birds, 1862, 297 (Jamaica).—MARCH, Proc. Ac. Nat. Sci. Phila., 1863, 285 (Jamaica).—ELLIOT, Ibis, 1872, 354, part (Jamaica; synonym.; crit.); Classif. and Synop. Troch., 1879, 103, part (Jamaica).—MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., iv, livr. 2, 1877, 82, part, pl. 106, figs. 1, 2 (Jamaica).—CORY, Auk, iii, 1886, 354, part (Jamaica); Birds West Ind., 1889, 149, part (Jamaica); Cat. West Ind. Birds, 1892, 13, 107, part (Jamaica).—RIDGWAY, Rep. U. S. Nat. Mus. for 1890 (1891), pl. 17 (bird, nest, and eggs; Jamaica).—SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 409, part (Jamaica).—SCOTT, Auk, ix, 1892, 277 (Jamaica).—FIELD, Auk, xi, 1894, 126 (Port Henderson, Jamaica; descr. nest).—BOUCARD, Gen. Hum. Birds, 1892, 6, part (Jamaica).—LODGE, Ibis, 1896, 503 (Jamaica; habits).—NICOLL, Ibis, 1904, 577 (Kingston, Jamaica; notes).

[*Mellisuga*] *minima* BONAPARTE, Rev. et Mag. de Zool., 1854, 257.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 84, part (Jamaica).—MULSANT, Ann. Soc. Linn. Lyon, n. s., xxii, 1876, 227, part (Jamaica).—CORY, List Birds West Ind., 1885, 18, part (Jamaica).—SHARPE, Hand-list, iii, 1900, 142, part (Jamaica).

*Mellisuga minima* NEWTON (A. and E.), Handb. Jamaica, 1881, 108.—HARTERT, Das Tierreich, Troch., 1900, 212, part (Jamaica).

*Zephyritis (Dyrinia) minima* MULSANT and VERREAUX, Classif. Troch., 1866, 88, part (Jamaica).

[*Hylocharis*] *minima* GRAY, Hand-list, i, 1869, 150, no. 1941, part (Jamaica).

*Trochilus minutulus* VIEILLOT, Ois. Am. Sept., ii, 1807, 73 (new name for "*T. minutus* L. Gm.," i. e., *T. minimus* Linnæus).

*Mellisuga humilis* GOSSE, Birds Jamaica, 1847, 127; Illustr. Birds Jam., 1849, pl. 21.—MARCH, Proc. Ac. Nat. Sci. Phila., 1863, 285 (Jamaica).

*Mellisuga humila* ALBRECHT, Journ. für Orn., 1862, 201 (Jamaica).

*Trochilus pygmaeus* (not of Spix, 1824) SWAINSON, Birds of Brazil, Mex., etc., [1841?], pl. 78.

<sup>a</sup> Nine specimens.



## MELLISUGA CATHARINÆ (Sallé).

## HAITIAN Vervain Humming Bird.

Similar to *M. minima* but adult male much darker (both above and below), with wing and tail longer, the latter more deeply forked, the adult female slightly darker below.

*Adult male*.—Above dark dull metallic green, darker (sometimes nearly black) on rump and upper tail-coverts; tail black, including middle rectrices; remiges dusky, very faintly glossed with purplish; auricular and suborbital regions deep sooty gray; chin, throat, and chest pale gray, the first two with feathers dusky gray centrally producing a spotted effect; under parts of body dark metallic green, intermixed along median line with gray; under tail-coverts dark metallic green narrowly margined with pale gray and with base of feathers grayish; femoral and lumbar tufts white; bill dull black; iris dark brown; feet dusky; length (skins), 57–66 (62); wing, 34–36.5 (35.1); tail, 16.5–19 (17.9), middle rectrices, 12–14 (12.8).<sup>a</sup>

*Adult female*.—Above rather dark metallic green, bluish green or (rarely) bronze-green, including basal two-thirds (approximately) of middle rectrices; lateral and terminal or subterminal portion of middle rectrices black, the outermost pair broadly, the next less broadly tipped with dull white, the third sometimes narrowly tipped with the same; remiges dusky, faintly glossed with purplish; under parts pale gray, paler (nearly grayish white) on chin, throat, and abdomen, deepening into sooty gray laterally (especially on auricular and suborbital regions and sides of neck), the sides and flanks glossed with metallic green; bill, etc., as in adult male; length (skins), 65–71 (68); wing, 36–40 (37.1); tail, 18.5–21 (19.5); culmen, 10–11.5 (10.8).<sup>b</sup>

*Immature male*.—Similar to the adult female but feathers of chin and throat with a darker gray mesial streak, and sides more strongly or extensively glossed with green.

Island of Haiti (Le Coup and Port au Prince, Haiti; Catare, Samaná Bay, Sanchez, La Vega, Honduras, Caña Honda, La Canita, San Francisco Mountains, and Rio San Juan, Santo Domingo).

(??) [*Trochilus*] *niger* LINNÆUS, Sys. Nat., ed. 10, 1758, 121 (Indiis); ed. 12, pt. 1, 1766, 192.—Gmelin, Syst. Nat., i, pt. i, 1788, 496.

*Trochilus niger* (not of Linnæus?) VIEILLOT, Ois. Am. Sept. i, 1807, 73 (*L'Oiseau-mouche à ventre gris*).

*Trochilus mellisugus* (not of Latham) VIEILLOT, Nouv. Dict. d'Hist. Nat., vii, 1817, 363, part (Santo Domingo c).

*Hyllocharis nigra* GRAY and MITCHELL, Gen. Birds, i, 1844, 114.

[*Ornismya*] *niger* BONAPARTE, Consp. Av., i, 1850, 81 (Santo Domingo).

*Trochilus minimus* (not of Linnæus) AUDEBERT and VIEILLOT, Ois. Dorés, i, 1802, 113, pl. 64, part.—VIEILLOT, Nouv. Dict. d'Hist. Nat., vii, 1817, 369, part.—LESSON, Index Gen. et Synop. Troch., 1832, p. xxvii, part.—BRYANT, Proc.

<sup>a</sup> Seven specimens.

<sup>b</sup> Six specimens.

<sup>c</sup> Cites also Cayenne and Porto Rico!

- Bost. Soc. N. H., 1867, 95 (Santo Domingo).—MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., Suppl., pl. 46, figs. 1, 2.
- [Trochilus] minimus* VIEILLOT, Tab. Enc. Méth., ii, 1822, 568, part.
- [Mellisuga] minimus* BONAPARTE, Consp. Av., i, 1850, 81, part ("Antilles").
- Ornismya minima* (not *Trochilus minimus* Linnaeus) LESSON, Hist. Nat. Ois.-Mouch., 1829, pp. xxxii, 213, pl. 79 (Santo Domingo); Index Gen. et Synop. Troch., 1832, p. xxvii (Santo Domingo).
- Mellisuga minima* GOULD, Mon. Troch., pt. ii, Nov., 1851 (vol. iii, 1861, text to pl. 133), part (Santo Domingo); Introd. Troch., oct. ed., 1861, 87, part (Santo Domingo).—REICHENBACH, Aufz. der Colibr., 1854, 6, part (Santo Domingo); Troch. Enum., 1855, 3, pl. 680, fig. 4490, part (Santo Domingo).—SALLÉ, Proc. Zool. Soc. Lond., 1857, 233 (Santo Domingo).—SCLATER, Cat. Am. Birds, 1862, 297, part (synonymy only).—ELLIOT, Ibis, 1872, 354, part (Santo Domingo; synon.; crit.); Classif. and Synop. Troch., 1879, 103, part (Santo Domingo).—MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., iv, livr. 2, 1877, 82, part (Santo Domingo).—CORY, Birds Haiti and San Dom., 1885, 92, pl. (22), fig. 6; Auk, iii, 1886, 354, part (Santo Domingo); Birds West Ind., 1889, 149 (Santo Domingo); Cat. West Ind. Birds, 1892, 103, 107, part (Santo Domingo).—SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 409, part (Santo Domingo).—BOUCARD, Gen. Hum. Birds, 1895, 6, part (Haiti and Santo Domingo).—CHERRIE, Contr. Orn. San Dom., 1896, 18 (song).—CHRISTY, Ibis, 1897, 329 (Sanchez and La Vega, Santo Domingo; habits).
- [Mellisuga] minima* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 84, part (Haiti).—MULSANT, Ann. Soc. Linn. Lyon, xxii, 1876, 227, part (Haiti).—CORY, List Birds West Ind., 1885, 18, part (Haiti).—SHARPE, Hand-list, ii, 1900, 142, part (Haiti).
- Mellisuga minima* HARTERT, Das Tierreich, Troch., 1900, 212, part (Haiti and Santo Domingo).
- Zephyritis (Dyrinia) minima* MULSANT and VERREAUX, Classif. Troch., 1866, 88, part.
- [Hylocharis] minima* GRAY, Hand-list, i, 1869, 150, no. 1941, part (Santo Domingo).
- Trochilus vielloti* SHAW, Gen. Zool., viii, pt. 1, 1812, 347 (based on "*L'Oiseau-mouche à ventre gris* Viell., pl. 53." Santo Domingo).
- Ornismia catharinæ* SALLÉ, Rev. et Mag. de Zool., Oct., 1849, 498 (Santo Domingo).

### Genus STELLULA Gould.

- Stellula* GOULD, Introd. Troch., oct. ed., 1861, 90. (Type, *Trochilus calliope* Gould.)
- Stellura* (emendation?) MULSANT and VERREAUX, Classif. Troch., 1865, 88; Hist. Nat. Ois.-Mouch., iv, 1877, 87. (Type, *Trochilus calliope* Gould.)

Small Trochilidae (length about 65–75 mm.) resembling *Atthis* but differing in longer tenth primary, relatively shorter and differently shaped and differently colored tail, with subspatulate middle rectrices (in both sexes), and in the very narrow and much elongated throat ("gorget") feathers of the adult male.

Bill about as long as head or slightly longer, slender, straight, nearly terete; culmen rounded but at extreme base contracted into a rather distinct ridge; tomia smooth; mandible with the usual lateral median groove or sulcus. Nasal operculum covered by the appressed frontal feathering, which anteriorly extends considerably beyond nostrils, forming a very short obtuse point or antia on each side of culmen.

Tarsus feathered, except on posterior side; lateral toes about equal in length, slightly shorter than middle toe. Wing about three times as long as exposed culmen, the outermost primary longest, not attenuated at tip. Tail about half as long as wing, double-rounded, the rectrices broadest subterminally, subspatulate (especially the middle pair) in adult male, in adult female rounded, with rectrices less distinctly subspatulate.

*Coloration*.—Above metallic bronze-green; beneath dull whitish medially and on chest, cinnamon-buffy laterally; adult male with narrow, elongated feathers of throat pure white basally, metallic reddish purple terminally, the tail (including middle rectrices) blackish passing into sooty grayish terminally and edged with cinnamon-rufous basally; adult female with throat whitish, sometimes flecked with dusky, middle rectrices bronze-greenish, other rectrices grayish basally (with shaft of that portion pale cinnamon) black subterminally or terminally, the two or three outermost tipped with white.

*Range*.—British Columbia to central Mexico. (Monotypic.)

#### STELLULA CALLIOPE (Gould).

##### CALLIOPE HUMMING BIRD.

*Adult male*.—Above metallic bronze-green, usually rather duller on forehead; middle pair of rectrices subspatulate or with subterminal portion contracted, dull purplish black or dusky, edged basally (more or less distinctly) with cinnamon-rufous, and broadly tipped with dull brownish gray; remaining rectrices similar in coloration, but cinnamonaceous basal edgings less distinct (sometimes obsolete) and grayish tip less distinct; remiges dull brownish slate or dusky, very faintly glossed with purplish; feathers of gorget narrow and distinctly outlined, much elongated posteriorly, pure white basally and metallic reddish purple (solferino) terminally, the basal white much exposed, especially on chin and upper throat; foreneck and chest white, or grayish white; rest of under parts more grayish, strongly tinged or suffused with cinnamon-buff laterally, the sides glossed, or overlaid, with metallic bronze-green, the under tail-coverts white, tinged with cinnamon-buff toward anal region; maxilla dull black or dusky; mandible dusky terminally, more brownish (flesh-color in life) basally; iris dark brown; feet dusky; length (skins), 66–73 (69); wing, 37–40 (38.7); tail, 19.5–20.5 (20); exposed culmen, 13.5–15 (14.3).<sup>a</sup>

*Adult female*.—Above metallic bronze-green or greenish bronze (usually much more bronzy than in adult male); remiges brownish slate or dusky, very faintly glossed with purplish; middle pair of rectrices dull bronze-green or greenish bronze, sometimes with terminal portion (more or less extensively) purplish dusky or

<sup>a</sup> Ten specimens.



blackish; next pair dull bronze-green with terminal third (more or less) black, the subbasal portion edged (on both webs), more or less distinctly, with cinnamon-buff; next pair similar but with the black relatively more extended and with an apical spot (usually small and wedge-shaped) of white; next similar but white apical spot larger and basal half mostly brownish gray; outermost rectrix like the last but only about the basal third grayish and white apical spot still larger; auricular region light brownish gray; a dusky triangular space in front of eye; chin and throat dull brownish white, usually more or less streaked or flecked with dusky or bronzy brownish; chest pale grayish cinnamon-buff or dull whitish, the median portion of breast and abdomen similar; sides and flanks cinnamon or deep cinnamon-buff, the under tail-coverts similar but paler; femoral tufts and tuft on each side of rump white; bill, etc., as in adult male; length (skins), 69-80 (75); wing, 41-44 (42.8); tail, 19.5-22.5 (21.5); exposed culmen, 15-16 (15.6).<sup>a</sup>

*Young male*.—Apparently not essentially if at all different from the adult female but older individuals with some metallic purple or purplish red feathers on middle of throat.

*Young female*.—Similar to the adult female but general color of upper parts more decidedly bronzy, with feathers very narrowly and indistinctly margined terminally with dull brownish or grayish buffy.

Western United States and British Columbia, south in winter over western and central Mexico; north to British Columbia (both sides of Cascade range, southern Rocky Mountains, and interior districts), and northern Idaho (Fort Sherman); east to Montana (Belt Mountains; Fort Ellis; Bear Creek; McDonald County), Colorado (Cheyenne Canyon; near Breckinridge, 9,500 feet; Antonito), New Mexico (Inscription Rock; Santa Fé Mountains; Pecos River; Pecos Baldy; El Moro; Hondo Canyon), and extreme western Texas (El Paso); breeding in mountains, chiefly above 5,000 feet, nearly to southern border of United States. Mexican localities: Sinaloa (Los Pielos); Michoacán (Patzcuaro, October); Guerrero (Amula); Mexico (near City of Mexico; Ajusco; Tetelco; Cerro de Guadalupe Pedregál); Aguas Calientes (Calvillo).

*Trochilus (Calothorax) calliope* GOULD, Proc. Zool. Soc. Lond., 1847, 11 (Mexico; coll. J. Gould?).

*[Calothorax] calliope* GRAY, Gen. Birds, i, Dec., 1848, 110.

*[Calothorax] calliope* BONAPARTE, Consp. Av., i, 1850, 85.—GRAY, Hand-list, i, 1869, 135, no. 1735.

*Calothorax calliope* GOULD, Mon. Troch., pt. xv, Sept., 1857; vol. iii, 1861, pl. 142.—XANTUS, Proc. Ac. Nat. Sci. Phila., 1859, 190 (Ft. Tejon, California).—D'OCA, La Naturaleza, iii, 1875, 27 (Valley of Mexico); Troq. de Mex., 1875, 18, pl. (3), fig. 10.

<sup>a</sup> Ten specimens.

- [*Callothorax*] *calliope* BONAPARTE, Rev. et Mag. de Zool., 1854, 257.
- Callothorax calliope* FEILNER, Ann. Rep. Smithson. Inst. for 1864 (1865), 429 (Yreka, n. California, breeding).
- [*Lucifer*. *δ*. *Calothorax*] *calliope* REICHENBACH, Aufz. der Colibr., 1854, 13.
- [*Lucifer*] *calliope* REICHENBACH, Troch. Enum., 1855, 10.
- Stellula calliope* GOULD, Introd. Troch., oct. ed., 1861, 90.—ELLIOT, Illustr. New and Unfig. N. Am. Birds, i, 1869, pl. 23; Classif. and Synop. Troch., 1879, 115.—COOPER, Orn. Cal., 1870, 363; Proc. Calif. Ac. Sci., 1875, 12 (Haywards, Alameda Co., California); 1876, 90 (Haywards).—COUES, Check List, 1873, no. 282; 2d ed., 1882, no. 417.—MERRIAM, Sixth An. Rep. U. S. Geol. Surv. Terr., 1872, 693 (Ft. Ellis, Montana); North Am. Fauna, no. 16, 1899, 117 (Mt. Shasta, California).—BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 445, pl. 47, fig. 9.—YARROW and HENSHAW, Rep. Orn. Spec. Wheeler's Surv. for 1871-73 (1874), 35 (Nevada).—HENSHAW, Rep. Orn. Wheeler's Surv. for 1873 (1874), 130, 162 (Camp Grant, White Mts., and Apache, Arizona; Inscription Rock, New Mexico); Zool. Expl. W. 100th Merid., 1875, 372 (localities in Nevada, Arizona, and New Mexico); Orn. Wheeler's Surv., 1876, 256 (mts. of California); 1879, 311 (range; habits); Auk, iii, 1886, 78 (upper Pecos R., New Mexico; habits).—RIDGWAY, Bull. Essex Inst., vi, 1874, 174 (Sierra Nevada, near Carson City); vii, 1875, 21 (Ruby Mts., Nevada), 33 (Parleys Park, Utah); Orn. 40th Parallel, 1877, 563 (localities in Nevada and Utah); Proc. U. S. Nat. Mus., iii, 1880, 187, 314; Nom. N. Am. Birds, 1881, no. 343; Rep. U. S. Nat. Mus. for 1890 (1891), 354, pls. 1, 2, 3, 41 (monogr.); Man. N. Am. Birds, 2d ed., 1896, 598.—VILLADA, La Naturaleza, ii, 1874, 359 (Cerro de Guadalupe Pedregal, Mexico).—BOUCARD, Notes Troch. du Mex., 1875, 5; Gen. Hum. Birds, 1895, 13 (near City of Mexico).—BELDING, Proc. U. S. Nat. Mus., i, 1879, 391, 393, 426 (Murphys and Big Trees, Calaveras Co., California).—HOFFMAN, Bull. U. S. Geol. and Geog. Surv. Terr., vi, 1881, 237 (Prospect Hill, Nevada; Owens Valley, California).—WILLIAMS, Bull. Nutt. Orn. Club, viii, 1883, 59 (Belt Mts., Montana).—SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 413 (lat. 48° 40' N.; Amula, Guerrero, etc.).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 362.—FISHER (A. K.), N. Am. Fauna, no. 7, 1893, 59 (Crocker's, near Yosemite Valley; Tejon Mts.).—ROADS, Proc. Ac. Nat. Sci. Phila., 1893, 44 (s. Rocky Mts. and interior distr. Brit. Columbia).—AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Auk, x, 1893, 62; Check List, 2d ed., 1895, no. 436; Check List, 3d ed., 1910, 204.—RICHMOND and KNOWLTON, Auk, xi, 1894, 304 (Bear Creek, s.-centr. Montana, Aug.).—BENDIRE, Life Hist. N. Am. Birds, ii, 1895, 219.—MCGREGOR, Auk, xiv, 1897, 92 (Oakland, California, April).—MERRILL, Auk, xiv, 1897, 355 (Ft. Sherman, Idaho, breeding).—COOKE, Bull. 44 Col. Agric. Coll., 1898, 163 (Cheyenne Canyon, Colorado, July); no. 56, 1900, 208 (near Breckinridge, Colorado, 9,500 ft., June 30); Auk, xxvi, 1909, 413 (Antonito, Colorado, Aug.).—GRINNELL (J.), Pub. 2, Pasadena Ac. Sci., 1898, 28 (Los Angeles Co., California, breeding above 5,000 ft.); Auk, xxii, 1905, 384 (Mt. Piños, California, 6,500-8,500 ft.); Univ. Calif. Pub. Zool., v, 1908, 72 (San Bernardino Mts., California, breeding in Canadian zone; habits).—SILLOWAY, Bull. Univ. Mont., no. 3, 1901, 54 (McDonald Lake, etc., Montana, breeding).—DAWSON, Auk, xviii, 1901, 401 (Okanogan, Chelan Co., Washington).—BAILEY (Florence M.), Handb. Birds W. U. S., 1902, 241, fig. 320; Auk, xxi, 1904, 355 (upper Pecos, New Mexico, 11,000 ft., August).—BROOKS, Auk, xx, 1903, 282 (w. of Clinton, Lilloet Distr., Brit. Columbia, breeding).—WIDMANN, Auk, xxi, 1904, 69 (Yosemite Valley).—MILLER (L. H.), Condor, vi, 1904, 103 (John Day R., Oregon).—SWARTH, Pacific Coast Avi-

- fauna, no. 4, 1904, 19 (Huachuca Mts., Arizona, above 9,000 ft., in migration).—MILLER (W. De W.), Bull. Am. Mus. N. H., xxi, 1905, 355 (Dos Pies; s. Sinaloa, 1 spec., April 17).—BOWLES, Auk, xxiii, 1906, 144 (Tacoma, Washington, 1 spec., May 10); Condor, x, 1908, 192 (Lake Chelan, Washington, breeding).—JOHNSON, Condor, viii, 1906, 27 (Cheney, Washington, transient).—SHELDON, Condor, ix, 1907, 189 (Eagle Lake, n. California, July).—EDSON, Auk, xxv, 1908, 434 (Bellingham Bay, Washington, rare).—KERMODE, Prov. Mus., 1909, 52 (both sides of Cascade range, Brit. Columbia).  
*[Stellula] calliope* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 84.  
*S[tellula] calliope* COUES, Key N. Am. Birds, 2d ed., 1884, 465.  
*Zephyritis (Stellura) calliope* MULSANT and VERREAUX, Classif. Troch., 1866, 88.  
*[Stellura] calliope* MULSANT, Ann. Soc. Linn. Lyon, n. s., xxii, 1876, 227.  
*Stellura calliope* MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., iv, livr. 2, 1877, 87.  
*Selasphorus calliope* XANTUS, Proc. Ac. Nat. Sci. Phila., 1859, 190 (Ft. Tejon, California).  
*Trochilus calliope* AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886, no. 436.—SCOTT, Auk, iii, 1886, 431 (Santa Catalina Mts., Arizona, 5,000 ft., April, August).—TOWNSEND (C. H.), Proc. U. S. Nat. Mus., x, 1887, 209 (lower McCloud R., California; descr. nests, etc.).—MERRILL, Auk, v, 1888, 257 (Ft. Klamath, Oregon; habits, etc.; descr. nest).—FANNIN, Check List, Birds Brit. Col., 1891, 30 (both sides of Cascade Range).—LAWRENCE (R. H.), Auk, ix, 1892, 44 (Grays Harbor, Washington, summer resid.).  
*T[rochilus] calliope* RIDGWAY, Man. N. Am. Birds, 1887, 316.  
*A[ttis] calliope* HARTERT, Das Tierreich, Troch., 1900, 211.  
*[Atthis] calliope* SHARPE, Hand-list, ii, 1900, 142.

### Genus ATTHIS Reichenbach.

- [Trochilus.]* *δ. Atthis* REICHENBACH, Aufz. der Colibr., 1854, 12. (Type, *Ornismya heloisa* Lesson and Delattre.)

Small Trochilidæ (length about 65–70 mm.) related to *Selasphorus* but differing in form and coloration of the tail in the adult male, which is slightly rounded, with rectrices broadly rounded at tip, the lateral rectrices with basal half (more or less) cinnamon-rufous, succeeded by a black band and white terminal spot; gorget with feathers rather more strongly individualized and relatively longer, especially the lateral ones.

Bill about as long as head or slightly shorter, slender, straight, nearly terete; culmen rounded, slightly contracted or indistinctly ridged at extreme base; tomia smooth; mandible with the usual lateral median groove. Nasal operculum hidden by appressed frontal feathering, which anteriorly extends beyond nostrils, forming a very short obtuse point or antia on each side of culmen. Tarsus feathered, except along posterior side; outer toe slightly shorter than middle toe, the inner toe decidedly shorter, hallux (apparently) shorter than outer toe. Wing about three times as long as exposed culmen, the outermost primary, or two outermost, longest, the outermost narrower and abruptly more or less attenuated (but not acuminate) terminally. Tail about three-fifths as long as wing, rounded, the



rectrices broadly rounded terminally (similar in form, and essentially so in coloration, in the two sexes).

*Coloration*.—Above metallic bronze-green, greenish bronze, or bronze, including middle rectrices; tail (except middle rectrices) cinnamon-rufous or rufescent basally, black subterminally, white or whitish at tip, in both sexes; chest dull whitish. Adult male with chin and throat brilliant metallic reddish purple, changing to violet or blue; rufous of lateral rectrices occupying basal half or more. Adult female with throat whitish, flecked with bronze or dusky; sides, flanks, and under tail-coverts suffused with cinnamon buffy, and rufous of lateral rectrices duller and involving less than basal half.

*Range*.—Mexico (including adjacent parts of Arizona) to highlands of Guatemala. (Three species or subspecies.)

ATTHIS HELOISA HELOISA (Lesson and Delattre).

HELOISE'S HUMMING BIRD.

*Adult male*.—Above metallic bronze-green, greenish bronze, or golden bronze (sometimes tinged with copper-bronze on back); middle pair of rectrices metallic bronze-green or greenish bronze (sometimes dusky at tip), both webs edged for basal half or more with cinnamon-rufous; next pair of rectrices with basal half or more cinnamon-rufous, the terminal portion black, this usually separated from the cinnamon-rufous by a space of bronze-green or greenish bronze; other rectrices with basal half or more cinnamon-rufous, the subterminal portion (extensively) black (usually with more or less of bronze-green or greenish bronze between the black and the cinnamon-rufous portion), the tip (broadly) white; remiges brownish slate color or dusky, very faintly glossed with violaceous; sides of head brownish gray or grayish brown, passing into dull white on anterior portion of malar region and on postocular region; chin and throat brilliant metallic magenta purple, changing to bluish purple and even, partly, to greenish blue, according to different inclinations of the light, the more posterior feathers of the throat much elongated, especially laterally; chest, sides of neck, breast (medially), abdomen, and under tail-coverts dull white, or grayish white; sides and flanks light cinnamon-rufous, overlaid, more or less extensively, by metallic bronze or bronze-green; bill dull blackish; iris dark brown; feet dusky; length (skins), 59–71 (68); wing, 32.5–38 (34.6); tail, 19–22.5 (20.7); exposed culmen, 11.5–13 (12.1).<sup>a</sup>

*Adult female*.—Above similar to the adult male, but tail with relatively much more black and less cinnamon-rufous, the latter also duller, especially on lateral rectrices, the middle pair of rectrices

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<sup>a</sup> Nine specimens.

without cinnamon-rufous edgings, the white tips also less purely white, those of inner rectrices sometimes cinnamomeous; chin and throat white, conspicuously spotted with metallic bronze; rest of under parts as in the adult male, but sides and flanks more extensively and uniformly cinnamon-rufous, and under tail-coverts more or less strongly tinged with the same; length (skins), 64-75 (69); wing, 35.5-38 (36); tail, 19-23 (21.2); exposed culmen, 11.5-13 (12.4).<sup>a</sup>

*Young male*.—Similar to the adult female, but tail, sides, and flanks as in adult male (the middle pair of rectrices, however, wholly bronze-green or greenish bronze).

Central and southern Mexico, in States of Tamaulipas (Galindo; Realito), Guanajuato, San Luís Potosí (Sierra San Luís Potosí), Aguas Calientes (Calvillo), Vera Cruz (Jalapa; Córdoba; Orizaba; San Lorenzo; Cuesta de Misantla; Cofre de Perote; San Andrés Tuxtla), Mexico (Valley of Mexico), Oaxaca (15 miles west of Oaxaca City; Totóntepec), Guerrero (Omilteme; Chilpancingo) and Territory of Tepic (Tepic).

*O[rnysmia] heloisa* LESSON and DELATTRE, Rev. Zool., ii, no. 1, Jan., 1839, 15 (Jalapa and Coátepec, Vera Cruz, Mexico).

*M[ellisuga] heloisa* GRAY, Gen. Birds, 1848, 113.

*T[ryphæna] heloisa* BONAPARTE, Rev. et Mag. de Zool., 1854, 257.

*Tryphæna heloisa* SCLATER, Proc. Zool. Soc. Lond., 1858, 297 (Oaxaca); 1859, 367 (Jalapa).

[*Trochilus*.] *δ. Atthis heloisa* REICHENBACH, Aufz. der Colibr., 1854, 12.

[*Trochilus*] *heloisa* REICHENBACH, Troch. Enum., 1855, 10, pl. 835, figs. 4966-4968.—GRAY, Hand-list, i, 1869, 145, no. 1870.

*Trochilus heloisa* AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886, no. 435.—HERRERA, La Naturaleza, (2), i, 1891, 322 (Valley of Mexico).

*T[rochilus] heloisa* RIDGWAY, Man. N. Am. Birds, 1887, 315.

*Selasphorus? heloisa* GOULD, Mon. Troch., pt. viii, Oct., 1854, pl. 2; vol. iii, 1861, pl. 141.

*Selasphorus heloisa* SCLATER, Proc. Zool. Soc. Lond., 1856, 288 (Córdoba, Vera Cruz); 1859, 386 (Totóntepec, Oaxaca); 1864, 177 (Valley of Mexico); Cat. Am. Birds, 1862, 298.—MULSANT and VERREAUX, Classif. Troch., 1866, 89.—COUES, Check List, 1873, no. 281.—D'OCA, La Naturaleza, iii, 1875, 19 (Jalapa); Troq. de Mex., 1875, pl. (1), fig. 3.

[*Selasphorus*] *heloisa* COUES, Key N. Am. Birds, 1872, 185.

*Selasphorus heloisa* D'OCA, Troq. de Mex., 1875, 9.

*Atthis heloisa* GOULD, Introd. Troch., oct. ed., 1861, 89.—REICHENBACH, Aufz. der Colibr., 1854, 12.—ELLIOT, Illustr. New and Unfig. Birds N. Am., pt. xii, 1868, pl. (vol. i, 1869, pl. 21); Classif. and Synop. Troch., 1879, 113.—COOPER, Orn. Calif., 1870, 361 ("Southern New Mexico;" error).—BOUCARD, Notes Troch. du Mex., 1875, 7, part (Córdoba, Jalapa, Orizaba, and San Andrés Tuxtla, Vera Cruz); Gen. Hum. Birds, 1895, 12 (Jalapa; San Andrés Tuxtla).—MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., iv, livr. 2, 1877, 91.—VILLADA, La Naturaleza, ii, 1874, 357 (Valley of Mexico).—RIDGWAY, Proc. U. S. Nat. Mus., i, 1878, 10 (descr.; synonym.; crit.); iii, 1880,

<sup>a</sup> Eight specimens.

187, 314; Nom. N. Am. Birds, 1881, no. 342; Man. N. Am. Birds, 2d ed., 1896, 598.—COUES, Check List, 2d ed., 1882, no. 416.—SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 411 (Valley of Mexico; Sierra de San Luis Potosí; Cofre de Perote, Jalapa, and Cuesta de Misantla, Vera Cruz; Calvillo, Aguas Calientes; Tepic; Oaxaca; Chilpancingo, Guerrero).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 360 (Patzcuaro, Michoacán; Totóntepec, Oaxaca; etc.).—HARTERT (E. and C.), Novit. Zool., i, 1894, 64 (Chilpancingo, Guerrero, 7,000 ft.).—CHAPMAN, Bull. Am. Mus. N. H., x, 1898, 34 (Jalapa).

*Atthis eloisæ* DUGÈS, La Naturelle, i, 1870, 141 (Patzcuaro, Michoacán).

*A[tthis] heloisæ* RIDGWAY, Proc. U. S. Nat. Mus., i, 1878, 9 (diagnosis).—COUES, Key N. Am. Birds, 2d ed., 1884, 465.

*[Atthis] heloisæ* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 84, part (Mexico).—MULSANT, Ann. Soc. Linn. Lyon, n. s., xxii, 1876, 227.

*Atthis heloisæ* BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 465, pl. 47, fig. 6.—RIDGWAY, Rep. U. S. Nat. Mus. for 1890 (1891), 380, pl. 46 (monogr.).—PHILLIPS, Auk, xxviii, 1911, 78 (Galindo and Realito, Tamaulipas).

*A[tthis] heloisæ* HARTERT, Das Tierreich, Troch., 1900, 210 (monogr.).

*[Atthis] heloisæ* SHARPE, Hand-list, ii, 1900, 142.

### ATTHIS HELOISA ELLIOTI (Ridgway).

#### ELLIOT'S HUMMING BIRD.

Similar to *A. h. heloisæ*, but averaging smaller (especially the bill); adult male with tip of outermost primary not contracted in width, sides of head much darker grayish brown (without whitish on malar region), and purple of throat decidedly more reddish. (Adult female not seen.)

*Adult male*.—Length (skin), 58–69 (63); wing, 34–37.5 (34.9); tail, 19–21 (20.3); exposed culmen, 10.5–11.5 (10.9).<sup>a</sup>

Guatemala (Calderas, Volcán de Fuego; Cuipaché and Volcán de Santa Maria, Quezaltenango; Cobán; El Rincón, San Marcos; Chilasco; Dueñas; Cobán; Guatemala City; Vera Paz).

*Selasphorus heloisæ* (not *Ornismya heloisæ* Lesson and Delattre) SCLATER and SALVIN, Ibis, 1859, 129 (Guatemala).—SALVIN, Ibis, 1860, 195 (Dueñas, Guatemala), 266 (tierra caliente and Volcán de Fuego, Guatemala); 1862, 96 (Volcán de Fuego).

*Atthis heloisæ* BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 465, part (Guatemalan references).

*Atthis heloisæ* BOUCARD, Notes Troch. du Mex., 1875, 7, part (Cobán, Guatemala); Liste Ois. récol. Guat., 1878, 46.—MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., iv, livr. 2, 1877, 91, part (Guatemala).

*Atthis ellioti* RIDGWAY, Proc. U. S. Nat. Mus., i, sig. 1, July 1, 1878, 9 (Volcan de Fuego, Guatemala; coll. U. S. Nat. Mus.); Rep. U. S. Nat. Mus. for 1890 (1891), 380; Man. N. Am. Birds, 2d ed., 1896, 598.—ELLIOT, Classif. and Synop. Troch., 1879, 114.—SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 412, 667 (El Rincón, San Marcos; Cuipaché and Volcán de Sta Maria, Quezaltenango; Calderas, Volcán de Fuego; Chilasco, Cobán, and Atitlán, Guatemala).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 361.—BOUCARD, Gen. Hum. Birds, 1895, 12, part (Guatemala).

<sup>a</sup> Eight specimens.



*A*[*this*] *elliotti* RIDGWAY, Rep. U. S. Nat. Mus., 1890, 380 (mon.).—HARTERT, Das Tierreich, Troch., 1900, 211 (mon.).

[*Atthis*] *elliotti* SHARPE, Hand-list, ii, 1900, 142.

*T*[*rochilus*] *elliotti* RIDGWAY, Man. N. Am. Birds, 1887, 315.

### ATTHIS HELOISA MORCOMI (Ridgway).

#### MORCOM'S HUMMING BIRD.

Similar to *A. h. heloisa*, but smaller (except bill); adult female paler below, with bronzy spots on chin and throat much smaller, sides less extensively cinnamon-rufous, and under tail-coverts pure white. (Adult male not seen.)

*Adult female*.—Length (skin), 66; wing, 36; tail, 19.5; exposed culmen, 12.5.<sup>a</sup>

Southern Arizona (Ramsey Cañon, Huachuca Mountains).

*Atthis morcomi* RIDGWAY, Auk, xv, Oct., 1898, 325 (Huachuca Mts., Arizona; coll. U. S. Nat. Mus.).—AMERICAN ORNITHOLOGISTS' UNION, Auk, xvi, 1899, 111; Check List, 3d ed., 1910, 204.—BAILEY (Florence M.), Handb. Birds W. U. S., 1902, 241.—SWARTH, Pacific Coast Avif. no. 4, 1904, 19 (Ramsey Cañon, Huachuca Mts.).

*A*[*this*] *morcomi* HARTERT, Das Tierreich, Troch., 1900, 211 (monogr.).

[*Atthis*] *morcomi* SHARPE, Hand-list, ii, 1900, 142.

### Genus SELASPHORUS Swainson.

*Selasphorus* SWAINSON, Fauna Bor.-Am., ii, 1831, 324, 496. (Type, *Trochilus rufus* Gmelin.)

*Selosphorus* (emendation) BONAPARTE, Consp. Av., i, 1850, 82.

*Selasphorus* (emendation) REICHENBACH, Troch. Enum., 1855, 11.

*Selasforus* (error) DUGÈS, La Naturelleza, i, 1870, 141.

*Selatophorus* (emendation) NEWTON, Dict. Birds, pt. ii, 1893, 448, in text.

Small Trochilidæ (length about 65–85 mm.), related to *Archilochus* and *Calypte*, but differing from both in having the tail more or less rounded or graduated in adult males, strongly rounded in adult females and young; adult males also differing from those of *Archilochus* in having the “gorget” elongated laterally, and from those of *Calypte* in having the pileum concolor with the back; adult males of most species with outermost primary attenuated and acute terminally.

Bill about as long as head to decidedly longer, straight, slender, terete; culmen rounded except basally, where contracted into a more or less distinct ridge; tomia smooth; mandible with the usual lateral median groove or sulcus. Nasal operculum rather broad and convex, tumid posteriorly, nude, but hidden by appressed frontal feathering, which anteriorly extends considerably beyond anterior edge of nostrils, forming a short obtuse point or antia on each side of culmen. Tarsus feathered, except on posterior side; lateral toe slightly shorter than middle toe, but (apparently) slightly longer than hallux. Wing about three times as long as exposed culmen, the outermost

<sup>a</sup> One specimen (the type).

primary or two outermost longest, and in adult males usually<sup>a</sup> attenuated and acuminate terminally (in *S. platycercus* slightly excurved, in other species strongly incurved). Tail of adult male about two-thirds as long as wing, more or less rounded or graduated (nearly truncate in *S. platycercus*), the rectrices more or less contracted and obtusely pointed terminally, the lateral ones sometimes very narrow; in adult females and young a little less than three-fifths to two-thirds as long as wing, rounded, the rectrices broader and rounded terminally.

*Coloration*.—Above metallic bronze-green or bronze, or else (in *S. rufus*) mostly cinnamon-rufous; chest white or whitish. Adult males with chin and throat metallic scarlet, rose red, wine purple, or heliotrope, the "gorget" elongated laterally; rectrices mostly dusky, edged, more or less broadly (at least on one web), with cinnamon-rufous, or else cinnamon-rufous with a mesial streak (at least near end) of dusky. Adult females and young with throat whitish, usually flecked with bronze or dusky, sometimes spotted with metallic red, etc., the lateral rectrices cinnamon-rufous basally and broadly tipped with white, cinnamon-buff, or cinnamon-rufous.

*Range*.—Southern Alaska to western Panamá. (Eight species.<sup>b</sup>)

#### KEY TO THE SPECIES OF SELASPHORUS.

a. Throat metallic red or purple. (*Adult males*.)

b. Pileum metallic greenish.

c. Throat metallic purple (reddish purple to greenish purple); rectrices mostly purplish black or dark bronzy purple.

d. Larger (wing more than 45, tail 30 or more, exposed culmen 16 or more); tip of outermost primary attenuated and recurved; throat bright solferino. (Western United States to Guatemala.)

*Selasphorus platycercus*, adult male (p. 597).

dd. Smaller (wing less than 45, tail less than 30, exposed culmen much less than 16); tip of outermost primary neither attenuated nor recurved; throat not solferino.

e. Throat dull rose purple to greenish heliotrope; middle rectrices mostly metallic green; under wing-coverts and axillars with little if any cinnamon-rufous.

f. Throat dull rose purple or wine purple. (Costa Rica and western Panamá.).....*Selasphorus flammula*, adult male (p. 601).

ff. Throat dull grayish or greenish purple (greenish heliotrope). (Costa Rica and western Panamá.)

*Selasphorus torridus*, adult male (p. 602).

ee. Throat bright reddish purple (pomegranate purple to nearly crimson); middle rectrices mostly purplish black or dark bronzy purple; under wing-coverts and axillars with much cinnamon-rufous.

f. Middle rectrices very broadly edged with cinnamon-rufous and inner webs of lateral rectrices broadly edged with same; under tail-coverts

<sup>a</sup> The tip of the outermost primary in *S. flammula*, *S. ardens*, and *S. torridus* is obtusely pointed and the quill less attenuated than in other species.

<sup>b</sup> The ninth species of Sharpe's Hand-List (vol. ii, p. 141), *S. floresii* Gould, is undoubtedly a hybrid of *Selasphorus rufus* (or *S. alleni*) and *Calypte anna*.

very pale rufous-buff or buffy whitish; wing 40–40.5, tail 28–29, exposed culmen 11.5–12. (Western Panamá.)

*Selasphorus ardens*, adult male (p. 604).

*ff.* Middle rectrices narrowly edged with cinnamon-rufous, the inner webs of lateral rectrices without rufous edging; under tail-coverts light cinnamon-rufous or vinaceous-cinnamon; wing 36.5–40 (38.4), tail 26.5–28.5 (27.7), exposed culmen 10–11.5 (10.5). (Costa Rica.)

*Selasphorus simoni*, adult male (p. 606).

*cc.* Throat brilliant metallic orange-red or scarlet; rectrices mostly cinnamon-rufous.

*d.* Smaller (wing less than 35, tail less than 25, exposed culmen less than 12). (Costa Rica and western Panamá.)

*Selasphorus scintilla*, adult male (p. 607).

*dd.* Larger (wing more than 36), tail not less than 25, exposed culmen 15 or more.

*e.* Back and rump metallic green; rectrices much narrower (the outermost much less than 2 wide), the middle pair not notched near tip. (Pacific coast from British Columbia to northwestern Mexico.)

*Selasphorus alleni*, adult male (p. 609).

*ee.* Back and rump cinnamon-rufous; rectrices much broader, the outermost not less than 2 wide, the middle pair notched near tip. (Western North America, from Guatemala to Alaska.)

*Selasphorus rufus*, adult male (p. 612).

*bb.* Pileum brilliant metallic red, like throat. (California to northwestern Mexico.)

*Selasphorus floresii*,<sup>a</sup> adult male (p. 616).

*aa.* Throat whitish, usually flecked with dusky, sometimes with a few feathers of metallic red or purple. (*Adult females.*)

*b.* Middle rectrices wholly metallic green or else merely edged with cinnamon-rufous.

*c.* Larger (wing 45.5–52, exposed culmen 17–20); tips of lateral rectrices pure white.....*Selasphorus platycercus*, adult female (p. 598).

*cc.* Smaller (wing 39.5–43.5, exposed culmen 11–13.5); tips of lateral rectrices more or less rufescent.

*Selasphorus flammula* (p. 602), *Selasphorus torridus* (p. 603), *Selasphorus ardens* (p. 605), and *Selasphorus simoni* (p. 606), adult females.<sup>b</sup>

*bb.* Middle rectrices extensively cinnamon-rufous basally.

*c.* Smaller (wing 34–37.5, exposed culmen 11.5–12.5); tips of lateral rectrices cinnamon-rufous.....*Selasphorus scintilla*, adult female (p. 608).

*cc.* Larger (wing 41–45, exposed culmen 17–19); tips of lateral rectrices white.

*d.* Lateral rectrices much narrower (not more than 2 mm.); wing 41–42 (41.6); tail, 23–26 (24.7).....*Selasphorus alleni*, adult female (p. 610).

*dd.* Lateral rectrices broader (more than 3 mm. wide); wing 43–45 (44.4); tail 24.5–28 (26.4).....*Selasphorus rufus*, adult female (p. 612).

## SELASPHORUS PLATYCERCUS (Swainson).

### BROAD-TAILED HUMMING BIRD.

*Adult male.*—Above metallic bronze-green or greenish bronze; middle pair of rectrices metallic bronze-green (sometimes more bluish green); rest of tail dull purplish or bronzy black, the pair

<sup>a</sup> This is undoubtedly a hybrid between *Selasphorus alleni* and *Calypte anna*.

<sup>b</sup> Before it is possible to give a key showing satisfactorily the differential characters of these species, the very careful examination and comparison of a much larger number of specimens is necessary.



next to middle pair usually glossed, more or less, with bronzy green (sometimes mostly of this color), the outer web edged (except terminally) with cinnamon-rufous, the next pair sometimes also narrowly edged with the same; remiges dark brownish slate or dusky, faintly glossed with purplish; chin and throat bright metallic reddish purple (usually more reddish than solferino), the feathers crossed by a broad subterminal (concealed) bar of dull white, their basal portion dusky gray; chest grayish white, passing into very pale gray on breast and abdomen; sides and flanks darker grayish, tinged (especially the flanks) with pale cinnamon, the sides and sides of breast overlaid by metallic bronze-green; femoral tufts white; under tail-coverts white with a central area of pale cinnamon or cinnamon-buff (sometimes partly bronze-green); bill dull black; iris dark brown; feet dusky; length (skins), 83-96 (90); wing, 46.5-50.5 (48.4); tail, 30-35 (31.7); exposed culmen, 16-19 (17.6).<sup>a</sup>

*Adult female*.—Above metallic bronze-green, including middle pair of rectrices, the latter sometimes blackish or dusky terminally; second rectrix (from middle) metallic bronze-green with terminal portion more or less extensively dusky; three outer rectrices, on each side, broadly tipped with white, cinnamon-rufous basally (more or less extensively), the remaining portion purplish or bronzy black with more or less of metallic bronze-green between the blackish subterminal and cinnamon-rufous basal areas; chin and throat dull white, the feathers with small mesial streaks or guttate spots of dusky or dusky bronze; chest dull brownish white or buffy grayish white, the breast and abdomen similar but, usually, more decidedly tinged with buffy; sides and flanks light cinnamon or pale cinnamon-rufous; under tail-coverts pale cinnamon or cinnamon-buff (sometimes partly grayish) centrally, broadly margined with white; femoral tufts white; bill, etc., as in adult male; length (skins), 83-97 (91); wing, 45.5-52 (49.9); tail, 27-32.5 (30.5); exposed culmen, 17-20 (18.6).<sup>b</sup>

<sup>a</sup> Nineteen specimens.

<sup>b</sup> Sixteen specimens.

| Locality.                                         | Wing. | Tail. | Culmen. |
|---------------------------------------------------|-------|-------|---------|
| MALES.                                            |       |       |         |
| Ten adult males from western United States.....   | 49.5  | 32.2  | 17.7    |
| Eight adult males from Mexico.....                | 48.6  | 31.3  | 17.6    |
| One adult male from Guatemala.....                | 46.5  | 30.5  | 16      |
| FEMALES.                                          |       |       |         |
| Ten adult females from western United States..... | 49.9  | 30.3  | 18.6    |
| Six adult females from Mexico.....                | 49.8  | 30.7  | 18.6    |

*Young male*.—Similar to the adult female but feathers of upper parts (especially rump and upper tail-coverts) indistinctly margined terminally with pale brownish buff or cinnamon, and lateral rectrices with much less of cinnamonaceous on basal portion.

*Young female*.—Similar to the young male but rectrices as in adult female.

Mountain districts of western United States; north to Idaho (Big Butte), Montana (Gallatin County); east to eastern base of Rocky Mountains in Wyoming (Cheyenne), western Nebraska (Glen, Sioux County), Colorado, New Mexico, and western Texas (Chisos Mountains; Davis Mountains); west to the Sierra Nevada (casually to Oakland, California); southward over greater part of Mexico, in States of Sonora (Micoba), Nuevo León (Cerro de la Silla), Tamaulipas (Miquihuana), Aguas Calientes (Sierra de Calvillo), Durango (Guanacavi), Zacatecas (Sierra de Valparaiso), Michoacán (Patzcuaro), Jalisco (Sierra de Bolaños), Colima (Volcán de Colima; Sierra Nevada de Colima), Hidalgo (Real del Monte), Mexico (City of Mexico; Tenango del Valle; Ajusco; Popocatepetl; Rio Frio, Ixtacihuatl; Hacienda Eslava; north slope Volcán de Toluca), Puebla (Chalchicomula; Pinál), Vera Cruz (Cofre de Perote; Córdova; Jalapa; Miradór), and Oaxaca (Tonagüia) to highlands of Guatemala (mountains above Totonicapám; Paramos; Cuipaché and San Martín, Quetzaltenango; El Rincón, San Marcos); apparently breeding throughout its general range.

*Trochilus platycercus* SWAINSON, Philos. Mag., n. s., i, 1827, 441 (Mexico).—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886, no. 432.—SCOTT, Auk, iii, 1886, 431 (Santa Catalina Mts., Arizona; breeding?).—STONE, Proc. Ac. Nat. Sci. Phila., 1890, 214 (Chalchicomula, Puebla).—MEARNS, Auk, vii, 1890, 255 (San Francisco Mts., Arizona, breeding in spruce belt; habits).—MERRIAM, North Am. Fauna, no. 3, 1890, 39 (Grand Cañon of Colorado), 93 (San Francisco Mts., breeding in balsam and upper part of pine belt; habits); no. 5, 1891, 98 (Big Butte, Idaho).—ANTHONY, Auk, ix, 1892, 363 (s. w. New Mexico).—RHODES, Proc. Ac. Nat. Sci. Phila., 1892, 118 (Santa Catalina Mts., Arizona, breeding).—LOWE, Auk, xi, 1894, 268 (Wet Mts., Colorado, breeding at 10,000 ft.).

*T[rochilus] platycercus* RIDGWAY, Man. N. Am. Birds, 1887, 313.

*M[ellisuga] platycercus* GRAY, Gen. Birds, i, Dec., 1848, 113.

*[Selosphorus] platycercus* BONAPARTE, Consp. Av., i, 1850, 82.

*Selasphorus platycercus* GOULD, Mon. Troch., pt. iii, May, 1852, pl. 7; vol. iii, 1861, pl. 140; Introd. Troch., oct. ed., 1861, 89.—SCLATER, Proc. Zool. Soc. Lond., 1856, 288 (Córdova, Vera Cruz); 1858, 297 (Oaxaca); 1864, 177 (City of Mexico); Cat. Am. Birds, 1862, 298 (Mexico).—BAIRD, Rep. Pacific R. R. Surv., ix, 1858, 135, 922 (El Paso, Texas; Cantonment Burgwyn, New Mexico; Ft. Bridger, Wyoming); ed. 1860 ("Birds N. Am."), 922, atlas, pl. 43, figs. 1, 2; Rep. U. S. and Mex. Bound. Surv., ii, pt. 2, 1859, 6, pl. 5, figs. 1, 2 (El Paso, Texas; Cantonment Burgwyn, New Mexico); Cat. N. Am. Birds, 1859, no. 104.—HENRY, Proc. Ac. Nat. Sci. Phila., 1859, 106 (New Mexico).—SCLATER and SALVIN, Ibis, 1859, 129 (Guatemala).—SALVIN, Ibis, 1860, 196

(Quezaltenango and Mts. above Totonicapám, Guatemala); Cat. Birds Brit. Mus., xvi, 1892, 396.—MULSANT and VERREAUX, *Classif. Troch.*, 1866, 89; *Hist. Nat. Ois.-Mouch.*, iv, livr. 2, 1877, 94.—COUES, *Proc. Ac. Nat. Sci. Phila.*, 1866, 57 (Ft. Whipple, Arizona); *Check List*, 1873, no. 278; 2d ed., 1882, no. 413; *Birds North West*, 1874, 271; *Bull. Nutt. Orn. Club*, ii, 1878, 95 (Colorado; descr. nest).—COOPER, *Proc. Calif. Ac. Sci.*, 1868, 68 (Lake Tahoe, California); *Orn. Cal.*, 1870, 357.—ALLEN, *Bull. Mus. Comp. Zool.*, iii, 1872, 146 (Cheyenne, Wyoming), 151 (e. base Rocky Mts. in Colorado), 158 (South Park, Colorado), 163 (Mt. Lincoln, Colorado), 169 (Ogden, Utah), 180.—RIDGWAY, *Bull. Essex Inst.*, v, 1873, 185 (Colorado); vii, 1875, 21 (Ruby Mts., Nevada), 22 (East Humboldt Mts., Nevada), 30 (Salt Lake City, Utah), 34 (Parleys Park, Utah); *Orn. 40th Parallel*, 1877, 560 (localities in Utah and Nevada; habits); *Proc. U. S. Nat. Mus.*, iii, 1880, 187, 314; *Nom. N. Am. Birds*, 1881, no. 339; *Rep. U. S. Nat. Mus. for 1890 (1891)*, 341, 350 (monogr.; habits); *Man. N. Am. Birds*, 2d ed., 1896, 598.—MERRIAM, *Sixth Ann. Rep. U. S. Geol. Surv. Terr.*, 1872 (1873), 714 (Utah).—HENSHAW, *Ann. Lyc. N. Y.*, ix, 1874, 47 (Ogden, Utah); *Rep. Orn. Spec. Wheeler's Surv.*, 1871-73 (1874), 47 (Ogden), 88 (Ft. Garland, Colorado), 132, 162 (Apache, White Mts., and Camp Grant, Arizona; Inscription Rock, New Mexico); *Zool. Expl. W. 100th Merid.*, 1875, 377 (localities in Arizona, New Mexico, and Colorado; habits); *Auk*, iii, 1886, 75 (upper Pecos R., New Mexico, breeding; habits).—BAIRD, BREWER, and RIDGWAY, *Hist. N. Am. Birds*, ii, 1874, 462, pl. 47, fig. 5.—NELSON, *Proc. Bost. Soc. N. H.*, xvii, 1875, 347 (Salt Lake City).—DE OCA, *La Naturaleza*, iii, 1875, 204 (Valley of Mexico); *Troq. de Mex.*, 1875, 46, pl. (9), fig. 34.—SUMICHRAST, *La Naturaleza*, v, 1881, 250 (Valley of Mexico; alpine region of Orizaba).—BOUCARD, *Ann. Soc. Linn. Lyon*, xxii, 1876, 19 (Puebla); *Notes Troq. du Mex.*, 1875, 6 (Oaxaca; Puebla; Mexico; Guatemala); *Gen. Hum. Birds*, ii, 1892, 9.—ELLIOT, *Classif. and Synop. Troch.*, 1879, 109.—SCOTT, *Bull. Nutt. Orn. Club*, iv, 1879, 95 (Twin Lakes, Colorado).—MINOT, *Bull. Nutt. Orn. Club*, v, 1880, 232 (Colorado, from 2,000 ft. to above timber line).—DREW, *Bull. Nutt. Orn. Club*, vi, 1881, 140 (Colorado, 4,000-13,000 ft.).—BREWSTER, *Bull. Nutt. Orn. Club*, vii, 1882, 211 (Santa Rita Mts., Arizona, May).—ALLEN and BREWSTER, *Bull. Nutt. Orn. Club*, viii, 1883, 196 (Colorado Springs, Colorado).—HERRERA, *La Naturaleza*, (2), i, 1891, 322 (Valley of Mexico).—SALVIN and GODMAN, *Biol. Centr.-Am.*, Aves, ii, 1892, 355.—FISHER (A. K.), *North Am. Fauna*, no. 7, 1893, 58 (Juniper Mts., Nevada; opp. head of Owens R., w. slope Sierra Nevada; Sequoia National Park).—AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, *Auk*, x, 1893, 62; *Check List*, 2d ed., 1895, no. 432; 3d ed., 1910, 203.—BENDIRE, *Life Hist. N. Am. Birds*, ii, 1895, 210.—COX, *Auk*, xii, 1895, 357 (Mt. Orizaba, up to 11,000 ft. summer).—COOKE, *Bull. Col. Agric. Coll.*, no. 37, 1897, 86 (Colorado up to 2,000 ft. above timber line, breeding up to 11,000 ft.); *Auk*, xxvi, 1900, 413 (Springfield and Yuma, Colorado).—MCGREGOR, *Auk*, xiv, 1897, 91 (Oakland, California, 1 spec., May 8, 1890).—CARY, *Auk*, xviii, 1901, 234 (Black Hills, Wyoming, 2 specs., May).—BAILEY (Florence M.), *Handb. Birds W. U. S.*, 1902, 238; *Auk*, xxi, 1904, 354 (upper Pecos R., New Mexico, 7,000-11,600 ft., breeding).—SWARTH, *Pacific Coast Avifauna*, no. 4, 1904, 18 (Huachuca Mts., Arizona, breeding; habits).—SWENK, *Auk*, xxiii, 1906, 109 (Glen, Sioux Co., w. Nebraska, 1 pair, Aug.).—MILLER (W. De W.), *Bull. Am. Mus. N. H.*, xxii, 1906, 167 (Guanacavi, Durango, Oct.).—SAUNDERS, *Condor*, xi, 1909, 197 (Gallatin Co., Montana, breeding; habits).—VISHER, *Auk*, xxvii, 1910, 282 (Santa Catalina Mts., Arizona, breeding).



- S[elasphorus platycercus]* CABANIS and HEINE, Mus. Hein., iii, 1860, 56 (Mexico).—COUES, Key N. Am. Birds, 2d ed., 1884, 463.—HARTERT, Das Tierreich, Troch., 1900, 206.
- [*Selasphorus*] *platycercus* REICHENBACH, Aufz. der Colibr., 1854, 13; Troch. Enum., 1855, 10, pl. 854, figs. 5027–5029.—BONAPARTE, Rev. et Mag. de Zool., 1854, 257.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 84. MULSANT, Ann. Soc. Linn. Lyon, n. s., xxii, 1876, 227.—SHARPE, Hand-list, ii, 1900, 141.
- [*Selasphorus platycercus*] var. *platycercus* BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 458.
- Selasphorus platycercus* DÜGES, La Natureza, i, 1870, 141 (Patzcuaro, Michoacan).—VILLADA, La Natureza, ii, 1874, 253 (Valley of Mexico).
- Ornismya tricolor* LESSON, Suppl. Ois.-Mouch., 1830–31, 125, pl. 14 ("Brésil"); Les Troch., 1831, 156, pl. 60 (Mexico); Index Gen. et Synop. Troch., 1832, p. xxxiv.—JARDINE, Nat. Libr., Humming birds, ii, 1833, pl. 13.
- C[ynanthus]? tricolor* JARDINE, Nat. Libr., Humming birds, ii, 1833, 170.
- Ornismya montana* LESSON, Les Troch., 1831, 161, 163, pls. 63, 64 (Mexico) Index Gen. et Synop. Troch., 1832, p. xxxiv.
- Trochilus montana* JARDINE, Nat. Libr., Humming birds, ii, 1833, 93.
- Trochilus montanus* SWAINSON, Birds Brazil, Mex., etc. [1841?], pl. 74.

### SELASPHORUS FLAMMULA Salvin.

#### LESSER BROAD-TAILED HUMMING BIRD.

Somewhat like *S. platycercus*, but much smaller; adult male with outermost primary not attenuated, middle pair of rectrices edged (on both webs) with cinnamonaceous, and color of gorget much duller; adult female with middle rectrices broadly edged with cinnamon-rufous, the outer ones broadly tipped with pale cinnamon-rufous or cinnamon-buff instead of white.

*Adult male*.—Above metallic bronze-green, somewhat darker and duller on pileum; middle pair of rectrices bronze-green broadly edged on both webs (except terminally) with cinnamon-rufous; other rectrices purplish dusky or black glossed with bronzy purple, the third and fourth (from outside) with both webs broadly edged (except terminally) with cinnamon-rufous, the outermost with a spot of cinnamon-rufous at tip of inner web (which is also indistinctly edged with cinnamonaceous), the next (second) with greater part of inner web (except terminally) cinnamon-rufous; remiges and primary coverts purplish dusky, the inner secondaries glossed with bronze-green; lores dark cinnamon-rufous or chestnut; gorget rather dull metallic purple (between heliotrope purple and wine purple, the feathers dusky gray basally, then crossed by a broad bar of cinnamon-buff, a narrow dusky bar separating this from the metallic tip; chest dull white, the median portion of breast and abdomen similar but slightly darker or more grayish; sides pale rusty or cinnamon-buff, spotted with metallic bronze-green, especially on sides of breast; under tail-coverts pale cinnamonaceous or cinnamon-buff, passing into paler on margins, the longer coverts sometimes mostly dull whitish; bill dull black, the mandible paler basally; iris dark brown; feet grayish

brown or dusky; length (skins), 69–74 (72); wing, 38.5–41.5 (40.2); tail, 26–28.5 (27.5); exposed culmen, 11–12.5 (11.7).<sup>a</sup>

*Adult female*.—Above similar in color to the adult male, but three outer rectrices (on each side) broadly tipped with pale cinnamon-rufous or cinnamon-buff, and with the basal portion extensively cinnamon-rufous; chin and throat dull white (often more or less tinged with cinnamonaceous) streaked or spotted with grayish brown or dusky; rest of under parts as in adult male, but sides without green spotting; length (skins), 71–78 (74); wing, 41–43.5 (42); tail, 25–27 (26.2); exposed culmen, 12–13.5 (12.9).<sup>a</sup>

Highlands of Costa Rica (Volcán de Irazú; Volcán de Turrialba; Sabana de Cartago; La Estrella de Cartago; Cerro de la Candelaria; Santa Maria de Dota; Rancho Redondo).

*Selasphorus flammula* SALVIN, Proc. Zool. Soc. Lond., 1864, 586 (Volcán de Cartago, i. e., Volcán de Irazú, Costa Rica; coll. Salvin and Godman); Cat. Birds Brit. Mus., xvi, 1892, 398.—LAWRENCE, Ann. Lyc. N. Y., ix, 1868, 123 (Volcán de Irazú).—FRANTZIUS, Journ. für Orn., 1869, 315 (Costa Rica).—MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., iii, livr. 3, 1876, pl. 44; iv, livr. 2, 1877, 99 (Cartago); livr. 3, 1878, 220, 221, pl. 107.—BOUCARD, Proc. Zool. Soc. Lond., 1878, 70 (Volcán de Irazú, 10,000 ft.; habits); Gen. Hum. Birds, ii, 1892, 10 (Volcán de Irazú).—ELLIOT, Classif. and Synop. Troch., 1879, 110.—RIDGWAY, Proc. U. S. Nat. Mus., v, 1882, 497 (Volcán de Irazú).—ZELEDÓN, Cat. Aves de Costa Rica, 1882, 20; Anal. Mus. Nac. Costa Rica, i, 1887, 121.—SHARPE, Suppl. Gould's Mon. Troch., 1883, pl. 31.—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 357.—HARTERT, Novit. Zool., ii, 1895, 68 (Faldas de Irazú, La Estrella de Cartago, and Santa Maria de Dota, Costa Rica; descr. adult male and female).

[*Selasphorus flammula* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 84.—MULSANT, Ann. Soc. Linn. Lyon, n. s., xxii, 1876, 227.—SHARPE, Hand-list, ii, 1900, 141.

*S[elasphorus] flammula* RIDGWAY, Rep. U. S. Nat. Mus. for 1890 (1891), 341 (diagnosis, etc.).—HARTERT, Das Tierreich, Troch., 1900, 205.

*Selasphorus flammula flammula* CARRIKER, Ann. Carnegie Mus., vi, 1910, 547 (high mts. of central Costa Rica).

[*Selasphorus platycercus*] var. *flammula* BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 459.

*Selasphorus (platycercus, var.?) flammula* BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 459, footnote.

[*Trochilus*] *flammula* GRAY, Hand-list, i, 1869, 144, no. 1866.

*Selasphorus torridus* (not of Salvin) RIDGWAY, Proc. U. S. Nat. Mus., vi, 1884, 415 (Costa Rica); vii, 1884, 14 (Volcán de Irazú).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 354, part (citation of *S. flammula* Nutting and loc. Volcán de Cartago).

### SELASPHORUS TORRIDUS Salvin.

#### HELIOTROPE-THROATED HUMMING BIRD.

Very similar to *S. flammula*, but adult male with throat ("gorget") very different in color (dull metallic grayish green faintly glossed with purple or dull grayish purple faintly glossed with dull green);

<sup>a</sup> Ten specimens.

adult female possibly not distinguishable from that of *S. flammula*, but apparently less suffused with pale vinaceous-cinnamon beneath, tips to lateral rectrices more whitish, and basal portion of lateral rectrices less extensively cinnamon-rufous.

*Adult male*.—Above metallic bronze-green, darker and duller on pileum; middle pair of rectrices with outer web bronze-green, the inner web dusky faintly glossed with bronze-green (sometimes mostly bronze-green), both webs broadly edged, except terminally, with cinnamon-rufous; other rectrices purplish black, the two (on each side) next to middle pair broadly edged (except terminally) with cinnamon-rufous,<sup>a</sup> the two outermost (sometimes second also) with a spot of same on terminal portion of inner web; remiges and primary coverts purplish dusky or dull brownish slate faintly glossed with purplish, the inner secondaries glossed with bronze-green; lores dark rusty or chestnut; gorget dull metallic grayish purple or heliotrope purple, changing to dull grayish green (or the latter changing to dull purplish), the feathers crossed beneath surface with a broad bar of cinnamon-buff, separated from the metallic tip by a narrow bar of dusky, the base dusky gray; chest dull white tinged with cinnamon-buff, the median portion of breast and abdomen similar but darker (more grayish); sides and flanks similar but more suffused with pale rusty or cinnamon and (especially on sides of breast) intermixed with metallic bronze-green; under tail-coverts cinnamon or cinnamon-buff margined with pale buff or buffy whitish; bill dull black, the mandible paler basally; iris dark brown; feet grayish brown or dusky; length (skins), 67–76 (72); wing, 39.5–42 (40.3); tail, 27–28.5 (27.7); exposed culmen, 11.5–12.5 (12.1).<sup>b</sup>

*Adult female*.<sup>c</sup>—Similar in coloration of upper parts to the adult male, but both webs of middle rectrices metallic bronze-green, the next to middle pair bronze-green, passing into black terminally, the outer web broadly edged for most of its length with cinnamon-rufous; outermost rectrix very broadly tipped with white (the white sometimes tinged with cinnamon-rufous or buffy), the subterminal portion (extensively) black, passing into grayish brown basally, the basal portion of shaft usually rufescent; second rectrix (from outside) similar, but with basal half (more or less) of inner web cinnamon-rufous, the corresponding part of outer web metallic bronze-green; third rectrix similar to second, but with basal half (more or less) of outer web broadly edged with cinnamon-rufous; chin and throat dull

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<sup>a</sup> The second and third (from outside) have the inner web also similarly edged.

<sup>b</sup> Five specimens.

<sup>c</sup> It is not absolutely certain that the females on which this description is based are of this species. They agree, however, with Salvin's description, and certainly are different in the coloration of the tail from an equal number of undoubted females of *S. flammula*.



white streaked or spotted with dusky; rest of under parts as in adult male, but sides more strongly suffused with pale cinnamon-rufous and without intermixture of green; length (skins), 67–77 (72); wing, 40.5–41.5 (41); tail, 24–26 (25.2); exposed culmen, 11–12.5 (11.7).<sup>a</sup>

*Immature male*.—Similar to the adult female, but sides and flanks glossed with metallic bronze-green; older specimens with one or more dull grayish purple or dull purplish green feathers on throat.

Highlands of Costa Rica (Volcán de Irazú; Volcán de Turrialba; Las Cruces de Candelária?; Dota Mountains) and western Panamá (Volcán de Chiriquí).

- Selasphorus torridus* SALVIN, Proc. Zool. Soc. Lond., 1870, 208 (Volcán de Chiriquí, Panamá; coll. Salvin and Godman); Cat. Birds Brit. Mus., xvi, 1892, 395.—MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., iv, livr. 2, 1877, 101.—ELLIOT, Classif. and Synop. Troch., 1879, 112.—ZELEDÓN, Anal. Mus. Nac. Costa Rica, i, 1887, 122 (Volcán de Irazú, Costa Rica).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 354, pl. 56, figs. 2, 3 (excl. syn. part).—BOUCARD, The Hum. Bird, ii, 1892, 73 (Volcán de Chiriquí); Gen. Hum. Birds, ii, 1892, 10 (Volcán de Chiriquí).—BANGS, Proc. New Engl. Zool. Club, iii, 1902, 31 (Volcán de Chiriquí, 10,300 ft.).—FERRY, Pub. 146, Field Mus. N. H., orn. ser., i, no. 6, 1910, 264 (Volcán de Turrialba, Costa Rica; habits). [*Selasphorus*] *torridus* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 84.—MULSANT, Ann. Soc. Linn. Lyon, n. s., xxii, 1876, 227.—SHARPE, Hand-list, ii, 1900, 141. *S*[*Selasphorus*] *torridus* RIDGWAY, Rep. U. S. Nat. Mus. for 1890 (1891), 341 (diagnosis, etc.).—HARTERT, Das Tierreich, Troch., 1900, 206. *Selasphorus flammula torridus* CARRIKER, Ann. Carnegie Mus., vi, 1910, 547 (Volcán de Irazú and Dota Mts., Costa Rica; crit.).

#### SELASPHORUS ARDENS Salvin.

#### GLOW-THROATED HUMMING BIRD.

Most like *S. flammula* but smaller, especially the bill; adult male with middle rectrices mostly if not wholly purplish black (except for the cinnamonaceous edging to both webs) and gorget intense (but not brilliant) reddish purple instead of dull rose purple; adult female with lateral rectrices more extensively tipped with pale cinnamon-rufous, middle rectrices broadly edged (for more than basal half) with cinnamon-rufous, and sides of head partly cinnamon-rufous.

<sup>a</sup> Three specimens.

| Locality.                                  | Wing. | Tail. | Ex-<br>posed<br>culmen. |
|--------------------------------------------|-------|-------|-------------------------|
| MALES.                                     |       |       |                         |
| Three adult males from Costa Rica.....     | 40    | 27.8  | 12.3                    |
| Two adult males from western Panamá.....   | 40.7  | 27.5  | 11.7                    |
| FEMALES.                                   |       |       |                         |
| One adult female from Costa Rica.....      | 41.5  | 25.5  | 11                      |
| Two adult females from western Panamá..... | 40.7  | 25    | 12.5                    |

*Adult male*.—Above deep metallic bronze-green, darker anteriorly, brighter and more bronzy posteriorly; middle rectrices broadly cinnamon-rufous laterally, glossy purplish black medially, this black median stripe sometimes passing into metallic green on edge of terminal portion on one web; remaining rectrices purplish black, the inner web broadly edged with cinnamon-rufous, this edging interrupted subterminally; loreal, orbital, and postocular regions and point of chin cinnamon-rufous; chin and throat (gorget) bright metallic purplish red (between crimson or burnt carmine and pomegranate purple), the feathers with a concealed broad buffy whitish bar across middle portion and pale grayish base; chest white, tinged (especially on posterior portion) with pale vinaceous-cinnamon or pinkish buff; sides and flanks rather dull metallic bronze-green, slightly suffused with cinnamon-rufous, the two lateral areas nearly confluent on upper breast; median line of breast (narrowly) and abdomen pale gray or grayish white; under tail-coverts buffy white or pale buff, deeper buff, or cinnamon-buff, mesially; femoral and lumbar tufts buffy white; bill dull blackish, the basal half, more or less, of mandible brownish (in dried skins); iris dark brown; feet dusky; length (skins), 69–72 (70.5); wing, 40–40.5 (40.2); tail, 28–29 (28.5); exposed culmen, 11.5–12 (11.7).<sup>a</sup>

*Adult female*.—Above metallic greenish bronze, much duller on pileum, the lower rump slightly suffused with cinnamon-rufous; middle rectrices metallic bronze-green, the outer web broadly tipped with blackish, the basal half or more of both webs broadly edged with cinnamon-rufous; outermost rectrix light cinnamon-rufous, crossed in middle portion by a broad band of purplish black; intermediate rectrices intermediate in coloration, according to position; remiges dusky, faintly glossed with purplish; loreal, superciliary, and postocular regions deep cinnamon-rufous or chestnut; auricular region dusky, suffused with cinnamon-rufous; suborbital and malar regions and sides of chin and throat cinnamon-buff, flecked with dusky; fading into paler buff, more sparsely flecked, on median portion of chin and throat; chest immaculate buffy white; under parts of body light cinnamon-rufous laterally, pale buff or buffy white along median line; under tail-coverts pale cinnamon-buff; femoral and lumbar tufts buffy white; bill, etc., as in adult male; length (skin), 67; wing, 39.5; tail, 24; exposed culmen, 13.<sup>b</sup>

Highlands of western Panamá (Castillo and Calovévora, Verágua; Volcán de Chiriquí).

*Selasphorus ardens* SALVIN, Proc. Zool. Soc. Lond., 1870, 209 (Castillo, Verágua, Panamá; coll. Salvin and Godman); Cat. Birds Brit. Mus., xvi, 1892, 398.—

<sup>a</sup> Two specimens.

<sup>b</sup> One specimen. I am very doubtful, however, whether this is not in reality a female of *S. scintilla*.

MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., ii, livr. 1, 1875, 22; iv, livr. 2, 1877, 103, pl. 108 (Castillo and Calovévora, Panama).—ELLIOT, Classif. and Synop. Troch., 1879, 110.—SHARPE, Suppl. Gould's Mon. Troch., 1883, 31.—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 356, part, pl. 56, fig. 1 (Castillo and Calovévora).—BOUCARD, The Hum. Bird, ii, 1892, 73 (Veragua); Gen. Hum. Birds, ii, 1892, 9 (Volcán de Chiriquí).

[*Selasphorus*] *ardens* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 84.—MULSANT, Ann. Soc. Linn. Lyon, n. s., xxii, 1876, 227.—SHARPE, Hand-list, ii, 1900, 141.

*S[elasphorus] ardens* RIDGWAY, Rep. U. S. Nat. Mus. for 1890 (1891), 341, part (Veragua).—HARTERT, Das Tierreich, Troch., 1900, 206, part (Veragua).

### SELASPHORUS SIMONI Carriker.

#### SIMON'S HUMMING BIRD.

Similar to *S. ardens* but smaller, especially the bill; adult male with middle rectrices much less broadly edged with cinnamon-rufous, inner webs of lateral rectrices without distinct (if any) cinnamon-rufous edging, under tail-coverts more strongly rufescent, and color of throat slightly more purplish (less reddish); adult female with much less rufous on tail (the outermost rectrix purplish black for much the greater part), no rufous on upper tail-coverts nor sides of head, sides less clear (more brownish) cinnamon-rufous, throat less tinged with rufous-buff, and under tail-coverts deeper rufous-buff.

*Adult male*.—Above deep metallic green, slightly darker on pileum, slightly more bronzy on rump and upper tail-coverts; tail bronzy purplish black or dark bronzy purple, the middle pair of rectrices narrowly edged (except terminally) on both sides with cinnamon-rufous, and usually with inner web partly dark metallic green; next pair also edged with cinnamon-rufous, at least on outer web; outermost pair usually with a small subterminal spot of cinnamon-rufous on edge of inner web; remiges dusky, faintly glossed with violaceous; chin and throat (gorget) bright (but not brilliant) metallic reddish purple (nearest pomegranate purple), the feathers dusky grayish at base and crossed in middle portion by a broad bar (concealed) of pale cinnamon-buff; chest dull white anteriorly, passing into grayish cinnamon-buffy posteriorly; sides and flanks metallic bronze-green, suffused (especially on flanks) with rusty, passing into pale buffy grayish on median portion of breast and abdomen; under tail-coverts light cinnamon-rufous (deepest toward anal region); femoral and lumbar tufts white or buffy white; bill dull blackish, the mandible more brownish basally; iris dark brown; feet dusky; length (skins), 66–73 (71); wing, 37–40 (38.4); tail, 26.5–28.5 (27.7); exposed culmen, 10–11.5 (10.5).<sup>a</sup>

*Adult female*.—Above bright metallic bronze-green or greenish bronze, including upper tail-coverts; middle rectrices similar, but

<sup>a</sup> Ten specimens.



outer web darker and less bronzy green, becoming purplish black terminally and rather broadly edged with cinnamon-rufous, the inner web very narrowly edged with the same; outermost rectrix purplish black, with basal third of shaft, basal portion of inner web, and edge of inner web for about basal two-thirds, together with a broad tip, pale cinnamon-rufous; the remaining rectrices mostly purplish black, rather broadly edged on outer web (nearly to tip) with cinnamon-rufous; remiges dusky, faintly glossed with violaceous; chin and throat dull white, tinged or suffused with buffy (the anterior and lateral portions of chin pale cinnamon-rufous or rusty buff), the whole throat flecked with small guttate streaks or spots of dusky; chest dull buffy white; passing into duller, more grayish, white on median portion of breast and abdomen; sides and flanks light rusty brownish (nearly russet) slightly glossed or intermixed with bronzy; under tail-coverts pale cinnamon-rufous or vinaceous-cinnamon; femoral and lumbar tufts buffy white; bill, feet, etc., as in adult male; length (skin), 69; wing, 41.5; tail, 26.5; exposed culmen, 11.5.<sup>a</sup>

*Immature male*.—Similar to the adult female but (at least in older individuals) with one or more feathers of metallic reddish purple on throat.

Highlands of Costa Rica (Volcán de Poás; Volcán de Barba; Las Cruces de Candelária).

*Selasphorus ardens* (not of Salvin, 1870) RIDGWAY, Proc. U. S. Nat. Mus., vi, 1884, 415 (Costa Rica).—SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 398.—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 356, part (Volcán de Poás and Las Cruces de Candelária, Costa Rica).

*S[elasphorus] ardens* RIDGWAY, Rep. U. S. Nat. Mus. for 1890 (1891), 341, part (Costa Rica).—HARTERT, Das Tierreich, Troch., 1900, 206, part (Costa Rica).

*S[elasphorus] underwoodi* (not of Salvin) HARTERT, Das Tierreich, Troch., 1900, 206.

*Selasphorus simoni* CARRIKER, Ann. Carnegie Mus., vi, Aug. 29 (i. e., Sept. 7), 1910, 550 (Volcán de Barba, Costa Rica; coll. E. A. and O. Bangs).

### SELASPHORUS SCINTILLA (Gould).

#### SCINTILLANT HUMMING BIRD.

Similar in coloration to *S. alleni*, but much smaller; rectrices much broader and more obtuse (especially lateral pair) and with median blackish area much broader and extending to base; adult female and young with lateral rectrices broadly tipped with cinnamon instead of white.

*Adult male*.—Above metallic golden or bronzy green, the upper tail-coverts mostly cinnamon-rufous basally and laterally; rectrices cinnamon-rufous, the middle pair with a broad, fusiform mesial stripe of purplish black, extending for nearly the entire length, the next

<sup>a</sup> One specimen.

two (on each side) with a similar but broader and more cuneate stripe, the two outer pairs (on each side) with outer web and part of inner web purplish black; remiges purplish dusky, the inner secondaries glossed with bronze-green, the primary coverts similar in color to primaries but darker; loreal and orbital regions deep cinnamon-rufous; chin and throat (gorget) brilliant metallic orange-red or orange (less scarlet than in *S. rufus* and *S. allenii*), changing to golden green in position *d*; chest dull white, tinged with cinnamon-buff posteriorly, the feathers dusky gray beneath surface; rest of under parts pale cinnamon-rufous or cinnamon-buff, paler medially, the sides (especially sides of breast) spotted with metallic bronze-green; bill dull black, the mandible paler basally; iris dark brown; feet grayish brown or dusky; length (skins), 61–68 (66); wing, 31–34 (32.7); tail, 22–24.5 (23.5); exposed culmen, 10–11 (10.5).<sup>a</sup>

*Adult female*.—Above similar in color to adult male, but slightly duller (especially on pileum); middle rectrices metallic bronze-green margined with cinnamon or pale cinnamon-rufous, the remaining rectrices cinnamon-rufous for basal half, the terminal half crossed by a broad subterminal band of black and broadly tipped with pale cinnamon-rufous or cinnamon-buff; chin and throat varying from dull buffy white to pale cinnamon-rufous, more or less streaked or spotted with dusky grayish brown or dull bronzy; rest of under parts as in adult male, but sides without green spotting; bill, etc., as in adult male; length (skins), 65–69 (67); wing, 34–37.5 (35.7); tail, 21–23.5 (22.5); exposed culmen, 11.5–12.5 (11.9).<sup>b</sup>

*Young male*.—Similar to the adult female, but middle rectrices mainly cinnamon-rufous.

*Young female*.—Similar to the adult female, but under parts strongly suffused with pale cinnamon-rufous, especially on throat, and feathers of upper parts indistinctly margined terminally with rusty.

Highlands of Costa Rica (Volcán de Irazú; Volcán de Turrialba; Coliblanco; Cartago; Rancho Redondo; Tucuríqui; Barranca; Cervantes; Tabacales; San José; Escazú; Cerro de la Candelária; Las Cruces de Candelária; Santa Maria de Dota; Copéy, Laguária, and San Lucas, Dota) and western Panamá (Volcán de Chiriquí; Boquete).

<sup>a</sup> Thirteen specimens.

<sup>b</sup> Ten specimens, from Costa Rica.

| Locality.                                  | Wing. | Tail. | Ex-<br>posed<br>culmen. |
|--------------------------------------------|-------|-------|-------------------------|
| MALES.                                     |       |       |                         |
| Ten adult males from Costa Rica.....       | 32.7  | 23.4  | 10.5                    |
| Three adult males from western Panamá..... | 32.7  | 24    | 10.7                    |

- Trochilus (Selasphorus) scintilla* GOULD, Proc. Zool. Soc. Lond., 1850, 162 (Volcán de Chiriquí, 9,000 ft., Panamá; coll. J. Gould).
- Selasphorus scintilla* GOULD, Mon. Troch., pt. iii, May, 1852; vol. iii, 1861, pl. 138; Introd. Troch., oct. ed., 1861, 89.—CABANIS, Journ. für Orn., 1863, 165 (Costa Rica).—MULSANT and VERREAUX, Classif. Troch., 1866, 89; Hist. Nat. Ois.-Mouch., ii, livr. 3, 1876, pl. 27; iv, livr. 2, 1877, 104, pl. 109 (Costa Rica; Veragua).—SALVIN, Proc. Zool. Soc. Lond., 1867, 155 (Volcán de Chiriquí); 1870, 209 (Volcán de Chiriquí); Cat. Birds Brit. Mus., xvi, 1892, 395 (Volcán de Irazú, Barranca, and Tucurriquei, Costa Rica; Chiriquí).—LAWRENCE, Ann. Lyc. N. Y., ix, 1868, 123 (Barranca, Cervantes, and Las Cruces de la Candelaria, Costa Rica).—FRANTZIUS, Journ. für Orn., 1869, 315 (Costa Rica).—BOUCARD, Proc. Zool. Soc. Lond., 1878, 70 (Cartago and Volcán de Irazú, 10,000 ft., Costa Rica); The Hum. Bird, ii, 1892, 73 (Veragua); Gen. Hum. Birds, ii, 1895, 8 (Cartago; Chiriquí).—ELLIOT, Classif. and Synop. Troch., 1879, 111.—ZELEDÓN, Cat. Aves de Costa Rica, 1882, 20; Anal. Mus. Nac. Costa Rica, i, 1887, 121.—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 353.—SALVADORI and FESTA, Boll. Mus. Zool., etc., Torino, xiv, 1899, no. 339, p. 7 (Chiriquí).—BANGS, Proc. New Engl. Zool. Club, iii, 1902, 31 (Boquete, Panamá, 4,000 ft.).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 548 (highlands of Costa Rica, above 3,500 ft.; habits).
- S[elasphorus] scintilla* CABANIS and HEINE, Mus. Hein., iii, 1860, 56 (Veragua).—RIDGWAY, Rep. U. S. Nat. Mus. for 1890 (1891), 340 (diagnosis, etc.).—HARTERT, Das Tierreich, Troch., 1900, 206.
- [*Selasphorus*] *scintilla* REICHENBACH, Aufz. der Colibr., 1854, 13; Troch. Enum., 1855, 10, pl. 853, figs. 5024-5026.—BONAPARTE, Rev. et Mag. de Zool., 1854, 257.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 84.—MULSANT, Ann. Soc. Linn. Lyon, n. s., xxii, 1876, 227.—SHARPE, Hand-list, ii, 1900, 141.
- [*Selasphorus rufus*] var. *scintilla* BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 459.
- Selasphorus (rufus, var.?) scintilla* BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 459, footnote.
- [*Trochilus*] *scintilla* GRAY, Hand-list, i, 1869, 144, no. 1864.
- (?) *Selasphorus underwoodi* SALVIN, Bull. Brit. Orn. Club, vi, no. xlv, April 30, 1897, p. xxxviii (Volcán de Irazú, Costa Rica; coll. Salvin and Godman); Ibis, 1897, 441 (reprint).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 549 (Costa Rica; crit.).
- (?) [*Selasphorus*] *underwoodi* SHARPE, Hand-list, ii, 1900, 141.

### SELASPHORUS ALLENI Henshaw.

#### ALLEN'S <sup>a</sup> HUMMING BIRD.

Similar to *S. rufus*, but smaller and with rectrices much narrower (the outermost much less than 2.5 wide in adult male, not more than 2.5 wide in adult female); adult male with upper parts (except upper tail-coverts and tail) metallic bronze-green (instead of cinnamon-rufous), and rectrices next to middle pair tapering gradually, without notch or sinuation near tip.

*Adult male*.—Above metallic bronze-green, the feathers of rump with basal portion (mostly concealed) deep cinnamon-rufous; upper

<sup>a</sup> Named for Charles A. Allen, of Nicasio, California, who first called attention to the specific distinctness of this species from *S. rufus*.



tail-coverts and tail deep cinnamon-rufous, the rectrices with a terminal, more or less fusiform, streak of purplish black or dusky, the lateral ones with this dusky confined mostly to outer web; remiges dark brownish slate or dusky, faintly glossed with purplish; loral, orbital, auricular, and postocular regions deep cinnamon-rufous, this sometimes extending, brokenly, across nape; chin and throat brilliant metallic scarlet or orange-red, changing in position *b* to golden and greenish, the latero-posterior feathers of the gorget elongated; chest white, passing gradually into pale cinnamon-rufous or cinnamon-buff on breast and abdomen, this into deep cinnamon-rufous on sides and flanks; femoral tufts white; under tail-coverts cinnamon-rufous, paler basally; bill dull black; iris dark brown; feet dusky; length (skins), 82-90 (86); wing, 36.5-38.5 (37.8); tail, 25-26.5 (25.6); exposed culmen, 15-16.5 (15.9).<sup>a</sup>

*Adult female*.—Above metallic bronze-green, the upper tail-coverts with basal portion light cinnamon-rufous (partly exposed); middle pair of rectrices with basal half (laterally, at least) cinnamon-rufous, the terminal half (more or less) metallic bronze-green; next pair similar, but terminal portion (extensively) black, the tip of inner web sometimes with a small spot of white; three outer rectrices (on each side) broadly tipped with white, crossed by a broad subterminal area of black, the basal portion cinnamon or dull light cinnamon-rufous, this separated from the subterminal black (at least on third rectrix) by more or less of metallic greenish; remiges dark brownish slate or dusky, faintly glossed with purplish; under parts dull white (sometimes slightly tinged with pale cinnamon-buffy), passing into light cinnamon-rufous on sides, flanks, and under tail-coverts, the throat usually spotted, more or less, with metallic orange-red or scarlet; bill, etc., as in adult male; length (skins), 78-90 (85); wing, 41-42 (41.6); tail, 23-26 (24.7); exposed culmen, 17-18.5 (17.8).<sup>b</sup>

*Young male*.—Similar to the adult female, but upper tail-coverts mostly (sometimes wholly) cinnamon-rufous, rectrices more extensively cinnamon-rufous, and throat strongly tinged with cinnamon-rufous and spotted or speckled with dark bronzy.

Pacific coast district of California and southern British Columbia (158-mile House, Caribou District; east side of Cascade range and southern Rocky Mountain district), eastward through southern California to southern Arizona (Bisbee; Santa Catalina Mountains; Huachuca Mountains), and to northern Lower California (Piñon, San Pedro Martir Mountains); breeding, locally (in Upper Sonoran and Transition zones), nearly throughout its range, as well as on Santa Bárbara Islands (San Clemente; Santa Catalina; Santa Cruz); in migration extending to Los Coronados Islands, Lower California,

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<sup>a</sup> Ten specimens.

<sup>b</sup> Nine specimens.

Sonora, and Chihuahua (Santa Barbara, September); also resident throughout greater part of its range, as far northward (at least) as Bellingham Bay, Washington.

(?) *Ornismya sasin* LESSON, Hist. Nat. Ois.-Mouch., 1829, pp. xxx, 190, pls. 66, 67 (based on *Le Sasin* Audebert, Ois. Dorés, i, 133, pl. 62); Suppl. Ois.-Mouch., 1831-32, 121, 123, 124, pls. 11, 12, 13 (California); Les Troch., 1831, 117, pl. 43 (California); Index Gen. et Synop. Troch., 1832, p. xxxv (California).

*Selasphorus sasin* HARTERT (E. and C.), Novit. Zool., i, no. 1, Jan., 1894, 22, 64 (California; crit.).

*Selasphorus rufus* (not *Trochilus rufus* Gmelin) GOULD, Mon. Troch., pt. iii, 1854, pl. 5; vol. iii, 1861, pl. 141, part; Introd. Troch., oct. ed., 1861, 88, part.—BAIRD, Rep. Pacific R. R. Surv., ix, 1858, 134, part (spec. no. 6059, *Stealacoom*, Washington).—COOPER and SUCKLEY, Rep. Pacific R. R. Surv., xii, pt. 2, 1860, 164, part (Washington).—COOPER, Orn. Cal., 1870, 355, part.—BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 459, part.—MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., iv, 1877, 106, part.—ELLIOT, Bull. Nutt. Orn. Club, ii, 1877, 101, excl. syn. (crit.); Classif. and Synop. Troch., 1879, 110, excl. syn., part.—BOUCARD, Gen. Hum. Birds, ii, 1892, 7, part.

*Selasphorus alleni* HENSHAW, Bull. Nutt. Orn. Club, ii, July, 1877, 53-58 (Nicasio, Marin Co., California; coll. H. W. Henshaw); iii, 1878, 11-15 (crit.); Field and Forest, iii, 1877, 95-98 (habits).—ELLIOT, Bull. Nutt. Orn. Club, ii, 1877, 97-102 (crit.).—RIDGWAY, Proc. U. S. Nat. Mus., iii, 1880, 187, 218, 314 (Nicasio to Santa Cruz, California); Nom. N. Am. Birds, 1881, no. 341; Rep. U. S. Nat. Mus. for 1890 (1891), 347 (monogr.; habits); Man. N. Am. Birds, 2d ed., 1896, 598.—CROWELL, Ornith. and Oölog., vii, 1883, 126-128 (habits in confinement).—EMERSON, Ornith. and Oölog., xi, 1886, 37 (nesting habits).—COUES, Check List, 2d ed., 1882, no. 412.—SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 394 (Nicasio, Tejon, and Coahuila Valley, California).—AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Auk, x, 1893, 62; Check List, 2d ed., 1895, no. 434; 3d ed., 1910, 204.—ALLEN, Bull. Am. Mus. N. H., v, 1893, 36 (Bisbee, Arizona, Aug., Sept.; Santa Barbara, Chihuahua, Sept. 21).—HARTERT (E. and C.), Novit. Zool., i, 1894, 63 (crit.; descr. nest and eggs).—BENDIRE, Life Hist. N. Am. Birds, ii, 1895, 216.—GRINNELL (J.), Pub. no. 1, Pasadena Ac. Sci., 1897, 15 (San Clemente I.; descr. nest and eggs); Pub. no. 2, 1898, 28 (Los Angeles Co., Cal., March, April); Condor, iii, 1901, 128 (breeding range); Auk, xxii, 1905, 384 (Seymour Canyon, Mt. Piños, California, 6,500 ft.; habits); xv, 1898, 235 (Santa Catalina I., Dec. abundant); Univ. Cal. Pub. Zool., v, 1908, 71 (San Bernardino Mts., June 28-Aug. 29; not breeding).—OBERHOLSER, Proc. U. S. Nat. Mus., xxii, 1900, 230 (Santa Cruz I., July).—BAILEY (Florence M.), Handb. Birds W. U. S., 1902, 241.—RATHBUN, Auk, xix, 1902, 135 (Seattle, Washington, rare summer res.).—BROOKS, Auk, xx, 1903, 282 (158-mile House, Caribou Distr., Brit. Columbia, breeding).—STONE, Proc. Ac. Nat. Sci. Phila., 1904, 582 (Mt. Sanhedrin, Mendocino Co., California).—RICHARDSON, Condor, iv, 1904, 135 (Piute Mts., s. e. California); x, 1908, 66 (Santa Catalina I., breeding).—SWARTH, Pacific Coast Avifauna, no. 4, 1904, 19 (Huachuca Mts., Arizona, July).—JENKINS, Condor, viii, 1906, 126 (Monterey Co., California).—BOWLES, Auk, xxiii, 1906, 144 (Tacoma, Washington, spring).—LINTON, Condor, x, 1908, 84 (San Clemente I., breeding), 127 (Santa Cruz I., Nov.).—ENSON, Auk, xxv, 1908, 434 (Bellingham Bay, Washington, resident).—WRIGHT, Condor, xi, 1909, 100 (Los Coronados Islands, Lower California).—TORREY, Condor, xi, 1909, 173 (San Diego, Jan.).—VAN ROSSEM, CONDOR, xi,

- 1909, 208 (Los Coronados Islands, April, common).—KERMODE, Prov. Mus.  
 1909, 52 ("eastern Cascades and Rocky Mts.," Brit. Columbia).  
*S[elasphorus] alleni* COUES, Key N. Am. Birds, 2d ed., 1884, 463.—HARTERT,  
 Das Tierreich, Troch., 1900, 205.  
*[Selasphorus] alleni* SHARPE, Hand-list, ii, 1900, 140.  
*Trochilus alleni* RIDGWAY, Proc. U. S. Nat. Mus., viii, sig. 23, Sept. 2, 1885, 355.—  
 AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886, no. 434.—SCOTT,  
 Auk, iii, 1886, 431 (Santa Catalina Mts., Arizona, 4,500 ft., 1 spec., July).—  
 FANNIN, Check List Birds Brit. Col., 1891, 30 (e. Cascade and Rocky Mt.  
 districts).—LAWRENCE (R. H.), Auk, ix, 1892, 44 (Grays Harbor, Wash-  
 ington, summer resid.).  
*T[rochilus] alleni* RIDGWAY, Man. N. Am. Birds, 1887, 314.

### SELASPHORUS RUFUS (Gmelin).

#### RUFOUS HUMMING BIRD.

*Adult male*.—Pileum dull metallic bronze or bronze-green; rest of upper parts, including loreal, orbital and auricular regions, sides of occiput, and greater part of tail, plain cinnamon-rufous, the back sometimes glossed with metallic bronze-green; rectrices with a terminal median, more or less fusiform or cuneate, area of purplish or bronzy dusky; remiges dark brownish slate or dusky, faintly glossed with purplish; chin and throat brilliant metallic scarlet; changing to golden green in position *b*; chest white, passing through cinnamon-buff posteriorly into cinnamon-rufous on rest of under parts (paler medially); the under tail-coverts whitish basally; femoral tufts white; bill dull black; iris dark brown; feet dusky; length (skins), 73–91 (84); wing, 38–41.5 (40.3); tail, 26–29 (27.9); exposed culmen, 15–17.5 (16.5).<sup>a</sup>

*Adult female*.—Above metallic bronze-green, usually slightly duller on pileum; remiges dark brownish slate or dusky, faintly glossed with purplish; middle pair of rectrices metallic bronze-green (usually more dusky terminally), both webs broadly edged basally with cinnamon-rufous (sometimes with whole basal half or more of this color); next pair with more than basal half cinnamon-rufous, then metallic bronze-green, the terminal portion purplish black; three outer pairs broadly tipped with white, the subterminal portion (extensively) purplish black, the basal half (approximately) cinnamon-rufous, the latter usually separated from the black by more or less of metallic bronze-green; chin, throat, and chest dull white, the throat usually with tips of some of the feathers metallic orange-red or scarlet (changing to golden and greenish), sometimes with a large patch of this color; rest of under parts cinnamon-rufous laterally, fading into dull buffy whitish on breast and abdomen; femoral tufts white; under tail-coverts pale cinnamon-rufous or cinnamon-buff centrally, broadly margined with white or buffy white, the longer

<sup>a</sup> Eighteen specimens.



ones sometimes with the central area pale grayish or brownish terminally; bill, etc., as in adult male; length (skins), 79–90 (85); wing, 43–45 (44.4); tail, 24.5–28 (26.4); exposed culmen, 17–19 (18).<sup>a</sup>

*Young male*.—Similar to the adult female but upper tail-coverts cinnamon-rufous, with a terminal spot of metallic bronze-green; middle pair of rectrices cinnamon-rufous with terminal portion metallic bronze-green (sometimes partly blackish) the lateral rectrices with white tip smaller and cinnamon-rufous deeper and more extensive, and feathers of throat with a terminal mesial spot or streak of dusky metallic bronze or bronze-green.

*Young female*.—Similar to the adult female but feathers of upper parts (especially rump and upper tail-coverts) narrowly and indistinctly margined terminally with pale dull cinnamon or buffy, and throat spotted or streaked with dark bronzy, as in young male.

Western North America; north to coast district of Alaska as far as latitude 61° (Eagle Lake; Glacier; Lake Bennett); east to Alberta (Banff, headwaters of Peace River, and 15 miles south of Henry House, breeding), Montana (Flathead Lake, breeding; Chief Mountain Lake; Nyack, June 22; Columbia Falls), Wyoming (Carbon, July), Colorado (breeding at from 6,500–10,500 feet), and New Mexico (upper Pecos River, 7,500–9,000 feet, breeding; Deer Springs and Inscription Rock, July); breeding southward to higher mountains of New Mexico and Arizona (Santa Catalina range), northern California (lower McCloud River; Mount Shasta; Camp Bidwell; Humboldt Bay and northward along coast) and southward along coast to Santa Clara County and in Sierra Nevada at least to Calaveras County (Big Trees), as well as, locally (in Transition and Canadian zones), throughout the general range; in winter some migrating southward to Lower California (San Quintín; Cerros Island), Santa Bárbara Islands, and over highlands of Mexico, through States of Sonora (San José Mountains, August), Zacatecas (Plateado, September; Xeres, September; Sierra de Valpariaso, August), Michoacán (Patzcuaro, August), Colima (Volcán de Colima, January), Mexico (near City of Mexico; Ajusco; Tetelco; Tlalpám, December; Volcán de Toluca, September), San Luis Potosí (mountains near Jesús Maria, September) and Vera Cruz (Miradór) to Oaxaca (La Parada; 15 miles west of Oaxaca City, September).

[*Trochilus*] *rufus* GMELIN, Syst. Nat., i, pt. 1, 1788, 497 (Nootka Sound, British Colombia; based on *Ruffed Honey sucker* Pennant, Arctic Zool., ii, 290; *Ruff-necked Humming Bird* Latham, Gen. Synop., i, pt. 2, 785).—LATHAM, Index Orn., i, 1790, 315.

*Trochilus rufus* JARDINE, Nat. Libr., Humming birds, ii, 1833, 97, pl. 11.—AUDUBON, Orn. Biog., iv, 1838, 555, pl. 379.—NUTTALL, Man. Orn. U. S. and Can., 2d ed., i, 1840, 714.—AMERICAN ORNITHOLOGISTS' UNION, Check

<sup>a</sup> Eleven specimens.

- List, 1886, no. 433.—ANTHONY, Auk, iii, 1886, 166 (Washington Co., Oregon, breeding).—EVERMANN, Auk, iii, 1886, 180 (Ventura Co., California; "breeding;" error?).—SCOTT, Auk, iii, 1886, 431 (Santa Catalina Mts., Arizona, 4,000-6,000 ft.; breeding?).—NELSON, Nat. Hist. Coll. Alaska, 1887, 161 (Sitka).—TOWNSEND (C. H.), Proc. U. S. Nat. Mus., x, 1887, 209 (lower McCloud R., n. California, breeding; habits).—MERRILL, Auk, v, 1888, 257 (Ft. Klamath, Oregon, transient).—BRYANT (W. E.), Proc. Calif. Ac. Sci., ser. 2, 1889, 289 (San Quintín, Lower California).—MERRIAM, North Am. Fauna, no. 3, 1890, 93 (San Francisco Mt., Arizona).—FANNIN, Check List Birds Brit. Col., 1891, 30 (both sides Cascade range).—LAWRENCE (R. H.), Auk, ix, 1892, 44 (Grays Harbor, Washington, summer resid.).
- Trochilus rufus* JARDINE, Nat. Libr., Humming birds, ii, 1833, 167.—RIDGWAY, Man. N. Am. Birds, 1887, 314.
- Trochilus (Selasphorus) rufus* SWAINSON, Fauna Bor.-Am., ii, 1831, 324.
- S[elasphorus] rufus* SWAINSON, Fauna Bor.-Am., ii, 1831, 496.—COUES, Key N. Am. Birds, 2d ed., 1884, 462.—HARTERT, Das Tierreich, Troch., 1900, 204.
- Selasphorus rufus* AUDUBON, Synopsis, 1839, 171; Birds Am., oct. ed., iv, 1842, 200, pl. 254.—GOULD, Mon. Troch., pt. iii, 1854, pl. 5, part; vol. iii, 1861, pl. 141, part; Introd. Troch., oct. ed., 1861, 88, part.—HEERMANN, Journ. Ac. Nat. Sci. Phila., 2d ser., ii, 1853, 269 (San Francisco, California).—NEWBERRY, Rep. Pacific R. R. Surv., vi, pt. iv, chapt. ii, 1857, 648 (California; Oregon).—BAIRD, Rep. Pacific R. R. Surv., ix, 1858, 134; Cat. N. Am. Birds, 1859, no. 103; Rep. U. S. and Mex. Bound. Surv., ii, pt. ii, 1859, 6 (El Paso, Texas).—XANTUS, Proc. Ac. Nat. Sci. Phila., 1859, 190 (Ft. Tejon, California).—COOPER and SUCKLEY, Rep. Pacific R. R. Surv., xii, pt. 2, 1860, 164, part (Washington; habits, etc.).—SCLATER, Cat. Am. Birds, 1862, 297 (Mexico); Proc. Zool. Soc. Lond., 1864, 177 (City of Mexico).—CASSIN, Proc. Ac. Nat. Sci. Phila., 1863, 319 (Sitka, Alaska).—COUES, Proc. Ac. Nat. Sci. Phila., 1866, 57 (Ft. Whipple, Arizona, breeding); Check List, 1873, no. 277; 2d ed., 1882, no. 411; Bull. U. S. Geol. and Geog. Surv. Terr., iv, 1878, 614 (Chief Mt. Lake, Montana, August).—BROWN, Ibis, 1868, 419 (Vancouver I.).—DALL and BANNISTER, Trans. Chicago Ac. Sci., i, 1869, 275 (Sitka).—COOPER, Orn. Cal., 1870, 355, part; (?) Proc. Calif. Ac. Sci., 1870, 58 (Santa Barbara and Santa Catalina islands).—FINSCH, Abth. Nat. Mus. Brem., iii, 1872, 29 (Sitka, Alaska).—BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 459, pl. 47, fig. 4.—HENSHAW, Rep. Orn. Spec. Wheeler's Surv., 1873 (1874), 131, 162 (Deer Springs and Inscription Rock, New Mexico, July; Apache, Arizona, July, August; Camp Grant, Arizona, Sept.); 1876, 256 (Santa Barbara, California, June; Tejon Mts., Aug.); 1879, 312 (near Camp Bidwell, California, breeding); Zool. Expl. W. 100th Merid., 1875, 375 (localities in Colorado, New Mexico, and Arizona; habits); Bull. Nutt. Orn. Club, ii, 1877, 52-57 (crit.); Ann. Rep. Wheeler's Survey, 1877, 1310, 1318 (mts. near Carson City, Nevada); Auk, iii, 1886, 76 (upper Pecos R., New Mexico, 7,500-9,000 ft., breeding; habits).—RIDGWAY, Bull. Essex Inst., vii, 1875, 10 (Truckee Valley, Nevada), 22 (East Humboldt Mts., Nevada); Field and Forest, 1877, 209 (Colorado); Orn. 40th Parallel, 1877, 559; Proc. U. S. Nat. Mus., iii, 1880, 187, 314; Nom. N. Am. Birds, 1881, no. 340; Rep. U. S. Nat. Mus. for 1890 (1891), 343, pl. 40 (monogr.; habits); Man. N. Am. Birds, 2d ed., 1896, 598.—DE OCA, La Naturaleza, iii, 1875, 9, pl. 5, fig. 19; Troq. de Mex., 1875, 29, pl. 5, fig. 19.—BOUCARD, Ann. Soc. Linn. Lyon, xxii, 1876, 18; Notes Troch. du Mex., 1875, 5 (La Parada, Oaxaca; habits); Gen. Hum. Birds, ii, 1892, 7, part (includes *S. alleni*!).—MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., iv, livr. 2, 1877, 106, part.—BELDING, Proc. U. S. Nat. Mus., i, 1879, 427 (Stockton, April; Big Trees,

- July).—SUMICHRAST, *La Naturaleza*, v, 1881, 250 (Valley of Mexico).—HERRERA, *La Naturaleza*, (2), i, 1891, 322 (Valley of Mexico).—BENDIRE, *Proc. Bost. Soc. N. H.*, xix, 1877, 128 (Camp Harney, Oregon); *Life Hist. N. Am. Birds*, ii, 1895, 213.—BELDING, *Proc. U. S. Nat. Mus.*, i, 1879, 393, 427 (Stockton, etc., California; breeding at Big Trees, Calaveras Co.).—DREW, *Bull. Nutt. Orn. Club*, vi, 1881, 140 (San Juan Co., Colorado, breeding); *Auk*, ii, 1885, 17 (Colorado, breeding from 6,500–10,500 ft.).—BEAN, *Proc. U. S. Nat. Mus.*, v, 1882, 161 (Sitka).—HARTLAUB, *Journ. für Orn.*, 1883, 265 (Alaska).—SALVIN, *Cat. Birds Brit. Mus.*, xvi, 1892, 392 (Patzcuaro, Michoacán; Oaxaca; Volcán de Colima; etc.).—SALVIN and GODMAN, *Biol. Centr.-Am.*, Aves, ii, 1892, 353.—ROADS, *Proc. Ac. Nat. Sci. Phila.*, 1893, 44 (Brit. Columbia).—AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, *Auk*, x, 1893, 62; *Check List*, 2d ed., 1895, no. 433; 3d ed., 1910, 204.—HARTERT (E. and C.), *Novit. Zool.*, i, 1894, 21 (California; descr. nest and eggs).—DAWSON, *Auk*, xiv, 1897, 175 (Okanogan Co., Washington, 8,000 ft.).—MERRILL (J. C.), *Auk*, xiv, 1897, 335 (Ft. Sherman, Idaho; breeding?).—COOKE, *Bull. Col. Agric. Coll.*, no. 37, 1897, 86 (s. w. Colorado, breeding at 7,000–10,000 ft.); no. 44, 1898, 162 (Carbon, Wyoming, July 24); *Auk*, xxvi, 1909, 413 (near Antonito, Colorado, 1 spec., Aug. 27).—GRINNELL (J.), *Auk*, xv, 1898, 128 (Sitka; breeding); *Pub. 2, Pasadena Ac. Sci.*, 1898, 28 (Los Angeles Co., California, Feb. 20–Oct. 5; not breeding); *Condor*, iii, 1901, 128 (breeding along coast of California north of Humboldt Bay); *Univ. Calif. Pub. Zool.*, v, 1909, 219 (Admiralty, Baranof, and Chichagoff islands, Idaho Inlet, etc., Alaska); v, 1910, 392 (Cordova, Hawkins I., etc., Prince William Sound).—MERRIAM, *North Am. Fauna*, no. 16, 1899, 117 (Mt. Shasta, breeding).—VAN DENBURG, *Proc. Am. Philos. Soc.*, xxxviii, 1899, 166 (Santa Clara Co., California, breeding).—BISHOP, *North Am. Fauna*, no. 19, 1900, 79 (Eagle I., Glacier, and Lake Bennett, Alaska).—OSGOOD, *North Am. Fauna*, no. 21, 1901, 46 (Queen Charlotte Islands).—SILLOWAY, *Bull. Univ. Montana*, no. 3, 1901, 54 (Flathead Lake, Montana, breeding).—BAILEY (Florence M.), *Handb. Birds W. U. S.*, 1902, 239, fig. 316; *Auk*, xxi, 1904, 354 (upper Pecos, New Mexico, 10,200–12,600 ft., July).—RATHBUN, *Auk*, xix, 1902, 135 (Seattle, Washington, summer res.).—RAY, *Auk*, xx, 1903, 184 (Glen Alpine, centr. Sierra Nevada, breeding).—SWARTH, *Pacific Coast Avifauna*, no. 4, 1904, 18 (Huachuca Mts., Arizona, migratory; habits).—FINLEY, *Condor*, vii, 1905, 59 (habits).—JOHNSON, *Condor*, viii, 1906, 27 (Cheney, Washington, transient).—THAYER and BANGS, *Condor*, ix, 1907, 78 (Cerro I., Lower California).—PREBLE, *North Am. Fauna*, no. 27, 1908, 391 (15 miles s. of Henry House, July, Banff, breeding, and headwaters of Peace R., Alberta).—EDSON, *Auk*, xxv, 1908, 434 (Bellingham Bay, Washington, summer res.).—ROCKWELL, *Condor*, x, 1908, 165 (Mesa Co., s. w. Colorado, migratory).—HENDERSON, *Univ. Cal. Stud.*, vi, 1909, 232 (Boulder, Colorado).—KERMODE, *Prov. Mus.*, 1909, 52 (Vancouver I. and Okanogan, Brit. Columbia).—SWARTH, *Univ. Calif. Pub. Zool.*, vii, 1911, 73 (Kuiu, Prince of Wales, Coronation, Warren, Dall, and Revillagigedo islands, etc., s. Alaska).
- [*Selasphorus*] *rufus* SCLATER and SALVIN, *Nom. Av. Neotr.*, 1873, 84.—MULSANT, *Ann. Soc. Linn. Lyon*, n. s., xxii, 1876, 227.—SHARPE, *Hand-list*, ii, 1900, 140.
- [*Selasphorus rufus*] var. *rufus* BAIRD, BREWER, and RIDGWAY, *Hist. N. Am. Birds*, ii, 1874, 459.
- Selasphorus rufus* DUGÉS, *La Naturaleza*, i, 1870, 141 (Guanajuato).—VILLADA, *La Naturaleza*, ii, 1874, 355 (Valley of Mexico).
- Sclatophorus rufus* NEWTON, *Dict. Birds*, pt. ii, 1893, 448, in text.



- Calliphlox rufa* BONAPARTE, Comp. and Geog. List, 1838, 10.—GAMBEL, Proc. Ac. Nat. Sci. Phila., 1846, 111; Weigmann's Archiv für Naturg., xiv, 1848, 82.
- Polytmus rufus* WOODHOUSE, Rep. Sitgreaves' Expl. Zuñi and Col. R., 1853, 66 (New Mexico).
- Trochilus ruffus* AUDEBERT and VIEILLOT, Ois. Dorés, i, 1802, 110, 111, pls. 61, 62.
- [*Trochilus*] *collaris* LATHAM, Index Orn., i, 1790, 318 (based on *T. rufus* Gmelin; cites also *Sassineer sasin* Cook's Last Voy., ii, 297, etc.).
- Trochilus collaris* VIEILLOT, Ois. Am. Sept., ii, 1807, 75; Nouv. Dict. d'Hist. Nat., vii, 1817, 374 (cites Ois. Dorés, pls. 61, 62).—SHAW, Gen. Zool., viii, 1811, 343.
- [*Trochilus*] *collaris* VIEILLOT, Tabl. Enc. Méth., ii, 1822, 571.
- [*Selasphorus*] *ruber* (not *Trochilus ruber* Linnæus)<sup>a</sup> BONAPARTE, Conspectus Av., i, 1850, 82.
- [*Selasphorus*] *ruber* BONAPARTE, Rev. et Mag. de Zool., 1854, 256.
- Selasphorus ruber* REICHENBACH, Aufz. der Colibr., 1854, 13; Troch. Enum., 1855, 10, pl. 852, figs. 5021–5023.—SCLATER, Proc. Zool. Soc. Lond., 1857, 126 (San José Valley, California); 1858, 297 (Oaxaca).
- [*Selasphorus*] *ruber* CABANIS and HEINE, Mus. Hein., iii, 1860, 56 (California).
- Selasphorus henshawi* ELLIOT, Bull. Nutt. Orn. Club, ii, Oct., 1877, 97, 102 (crit.); Classif. and Synop. Troch., 1879, 111.
- "*Trochilus silkensis* RATHKE (Bonaparte)."

### SELASPHORUS FLORESII Gould.<sup>b</sup>

#### FLOREST'S HUMMING BIRD.

*Adult male*.—Forehead and crown, chin, and throat glittering metallic rose red, changing to scarlet, especially on chin and upper throat; occiput, hindneck, back, scapulars, wing-coverts, rump, and upper tail-coverts metallic bronze-green; remiges dusky, or dull brownish slate, faintly glossed with purplish; middle pair of rectrices metallic green (much less bronzy than back, etc.), the outer web broadly edged with rufous-chestnut nearly to the tip, the inner web similarly marked for basal half; next rectrix chestnut-rufous with a median stripe of purplish-black, this stripe gradually coming to a point before the base of the feather is reached, but in the other direction widening so as to reach the edge of each web about 6.3 mm. from the tip; next rectrix similar, but the black occupying whole width of outer web to a distance of half an inch from the tip, but much restricted on inner web; next with the black extending about as far along the edge of the outer web, but not reaching farther along the shaft, while on the inner web it follows the shaft no farther than 5 mm. from the tip; lateral rectrix dusky, with shaft chestnut-rufous nearly to the tip and inner web a paler

<sup>a</sup> Syst. Nat., ed. 12, i, 1766, 193; based on *Little Brown Humming Bird* Edwards, pl. 32; *Oiseau-Mouche Pourpre* Buffon, Hist. Nat. Ois., vi, 24; *Mellisuga surinamensis* Brisson, Orn., iii, 701.

<sup>b</sup> Almost certainly a hybrid of *S. allenii* and *Calypte anna*.

tint of the same for about the basal half; chest pale brownish gray, paler anteriorly against the lower margin of the metallic gorget; middle line of breast and belly similar; sides and flanks metallic bronze-green, the feathers margined with pale brownish gray; axillars and adjacent smaller under wing-coverts light chestnut or cinnamon-rufous; femoral downy tufts white; under tail-coverts pale cinnamon-rufous, becoming grayish white on latero-basal portion; bill black; wing, 43.2; middle rectrices 25.4, longest rectrices (third pair), 30.5, shortest (outer pair), 24.1; exposed culmen, 16.5.<sup>a</sup>

Bolaños, Jalisco, 1845;<sup>b</sup> San Francisco, California, 1885; Haywards, Alameda Co., California, Feb. 20, 1901; near Nicasio, Marin Co., California, Feb. 26, 1909.

*Selasphorus floresii* (not *Trochilus floresii* Bourcier, 1846 c) GOULD, Mon. Troch., pt. xxiii, Sept. 1, 1861, pl. 10; vol. iii, 1861, pl. 139 (Bolaños, Jalisco, Mexico; coll. J. Gould; ex *Trochilus floresii* Loddiges, manuscript); Introd. Troch., oct. ed., 1861, 89.—MULSANT and VERREAUX, Classif. Troch., 1866, 89; Hist. Nat. Ois.-Mouch., iv, livr. 2, 1877, 98 (Bolaños).—VILLADA, La Naturaleza, ii, 1874, 356.—DE OCA, La Naturaleza, iii, 1875, 101, pl. 6, fig. 21; Troq. de Mex., 1875, 31, pl. (6), fig. 21.—BOUCARD, Ann. Soc. Linn. Lyon, xxii, 1876, 20; Notes Troch. du Mex., 1875, 7.—ELLIOT, Classif. and Synop. Troch., 1879, 109.—BRYANT, Forest and Stream, xxvi, no. 22, July 24, 1886, 426 (San Francisco, Cal.).—RIDGWAY, Rep. U. S. Nat. Mus. for 1890 (1891), 340, pl. 38, fig. 1; Man. N. Am. Birds, 2d ed., 1896, 598.—SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 392.—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 352.—AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Auk, x, 1893, 62; Check List, 2d ed., 1895, no. 431.1.—BENDIRE, Life Hist. N. Am. Birds, ii, 1895, 209.—EMERSON, Condor, iii, 1901, 68 (Haywards, Alameda Co., California, 1 spec., Feb. 20, 1901).—GRINNELL (J.), Pacific Coast Avifauna, no. 3, 1902, 41 (California records).—BAILEY (Florence M.); Handb. Birds W. U. S., 1902, 238.—TAYLOR (W. P.), Auk, xxvi, 1909, 291, in text (near Nicasio, Marin Co., California, 1 spec., Feb. 26, 1909; crit.).

<sup>a</sup> Description from no. 2620, coll. Walter E. Bryant, from San Francisco, California. This specimen agrees exactly with Mr. Gould's description and colored figures except in some minor and unessential points, and since Mr. Gould's description and figures, though from the same specimen, do not agree with one another, it is altogether likely that neither is quite correct. Mr. Gould describes the color of the middle pair of rectrices as "green with purple reflexions," and the lateral ones as having the outer webs "purple" and the "inner webs deep reddish buff," but they are not so colored in the plate, which represents the middle pair as green with a continuous broad border of rufous, and the outer pair as uniform purplish dusky, the intermediate rectrices being rufous with a narrow median stripe of purplish dusky, expanding into a wedge-shaped space near the tip. The coloration of the tail as represented in the plate agrees very well with that of the San Francisco specimen, except that the latter has the basal half of the inner web of the outermost rectrix rufous, and lacks the rufous border around the end of the middle rectrices the rufous running out to the edge a little past the middle of the feather, and thus confined to a little more than the basal half.

<sup>b</sup> It is possible that the specimen (Gould's type) in reality came from California, since Flores collected there as well as in Mexico.

<sup>c</sup> *Trochilus fioresii* Bourcier, Rev. Zool., 1846, 316 (Jamaica); = *Anthracothorax mango* (Linnaeus).

[*Selasphorus*] *floresii* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 84.—MULSANT, Ann. Soc. Linn. Lyon, n. s., xxii, 1876, 227.—SHARPE, Hand-list, ii, 1900, 141.

*S[elasphorus] floresii* HARTERT, Das Tierreich, Troch., 1900, 207 (monogr.).

[*Trochilus*] *floresii* (not of Bourcier, 1846) GRAY, Hand-list, i, 1869, 144, no. 1865.

[*Trochilus*] *floresii* RIDGWAY, Man. N. Am. Birds, 1887, 315.

*Trochilus floresii* CHAPMAN, Auk, v, 1888, 396.—AMERICAN ORNITHOLOGISTS' UNION, Suppl. Check List, 1889, 10; Abridged Check List, 1889, no. 431.1.

*Calypte floresii* BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 453.

*Calypte floresii* BOUCARD, Gen. Hum. Birds, ii, 1892, 5.

*Trochilus (Selasphorus) floresii* RIDGWAY, Man. N. Am., Birds, 1887, 593.

*Trochilus rubromitratus* or *Selasphorus rubromitratus* RIDGWAY, Auk, viii, Jan., 1891, 114 (proposed as substitute for specific name *floresii*, if considered preoccupied).

*Selasphorus rubromitratus* RIDGWAY, Rep. U. S. Nat. Mus. for 1890 (1891), 341 (monogr.).

### Genus CALYPTE Gould.

*Calypte a* GOULD, Monogr. Troch., pt. xi, May, 1856, vol. iii, 1861, text to pl. 134; Introd. Troch., oct. ed., 1861, 87. Type, *Ornismya costæ* Bourcier.)

*Leucaria* MULSANT, Ann. Soc. Linn. Lyon, xxii, 1876, 227 (Cat. des Ois.-Mouch., 1875, 29). (Type, *Ornismya costæ* Bourcier.)

*Zephyritis* MULSANT and VERREAUX, Mém. Soc. Imp. Sci. Nat. Cherb., xii (sér. 2, ii), 1866, 231 (Classif. Troch., 1866, 87). Type, *Ornismya anna* Lesson or *O. costæ* Bourcier.)

Small to extremely small<sup>b</sup> Trochilidæ (length about 55–95 mm.), resembling and closely related to *Archilochus*, but differing in normal inner (proximal) primaries, round-tipped instead of pointed rectrices, lateral rectrices more strongly incurved, the adult males with the “gorget” elongated laterally and the pileum glittering metallic red or violet, like the “gorget.”

Bill about as long as head or (in *C. helenæ*) slightly shorter, straight, rather slender, terete or (in *C. helenæ*) broader than deep basally; culmen rounded, except basally, where contracted into a distinct ridge; tomia smooth; mandible with the usual lateral median groove. Nasal operculum rather broad and convex, but hidden by appressed frontal feathering, which anteriorly extends much beyond anterior end of nostrils, forming a short obtuse point or antia on each side of culmen. Tarsus feathered, except along posterior side; outer toe slightly, the inner more decidedly, shorter than middle toe, the hallux about as long as inner toe. Wing about three times as long as exposed culmen, the outermost primary longest; all the primaries normal in shape. Tail of adult males one-half to nearly three-fifths as long as wing, emarginate (but three outermost rectrices, on each side, subequal in length), the lateral rectrices narrow (less so in *C. helenæ*), incurved (*C. costæ*), or the reverse (*C. anna*) terminally, all

<sup>a</sup> From *καλυπτή*, operta. (Gould.)

<sup>b</sup> One species, *C. helenæ* (Lembeye), the smallest of known birds!



rounded at tip; in adult females about half as long as wing, rounded, the lateral rectrices broad and rounded.

*Coloration*.—Above metallic bronze-green, including middle rectrices, or (in *C. helenæ*) bluish green passing into blue on middle rectrices; beneath mostly, or in large part, whitish or pale grayish. Adult male with entire head glittering metallic purplish red or (in *C. costæ*) violet, the feathers of sides of throat much elongated, and lateral rectrices plain dusky; adult females and young with pileum brownish gray (sometimes faintly bronzy or greenish), the chin and throat dull white (sometimes flecked or streaked with dusky or spotted with metallic red or violet), the lateral rectrices grayish basally and broadly tipped with white.

*Range*.—Southwestern United States and northwestern Mexico (two species) and island of Cuba (one species). (Three species.)

#### KEY TO THE SPECIES OF CALYPTE.

- a. Throat brilliantly metallic purplish red or violet, the pileum of same color. (*Adult males*.)
  - b. Larger (wing more than 40, tail more than 20, exposed culmen more than 15); middle rectrices metallic green or bronze-green.
  - c. Head metallic purplish red; wing 48.5–51 (49.7), tail 30.5–32.5 (31.3). (California to northwestern Mexico.).....*Calypte anna*, adult male (p. 619).
  - cc. Head metallic violet, changing to blue; wing 43–45.5 (44.4), tail 22–24.5 (22.6). (Northwestern Mexico to southern California and Nevada.)
    - Calypte costæ*, adult male (p. 623).
  - bb. Smaller (wing less than 30, tail less than 17, exposed culmen 10); middle rectrices metallic blue. (Cuba.).....*Calypte helenæ*, adult male (p. 625).
- aa. Throat pale gray or dull whitish (sometimes flecked with dusky or with a few metallic red or violet feathers); pileum greenish, like back, or grayish. (*Adult females*.)
  - b. Larger (wing more than 40, tail more than 20, culmen 17 or more); middle rectrices metallic green or bronze-green.
  - c. Wing 48–51 (49.6); under parts darker grayish; lateral rectrices broader and more rounded, 5 mm. wide at base of deeper gray tip.
    - Calypte anna*, adult female (p. 620).
  - cc. Wing 43.5–46 (44.7); under parts paler grayish; lateral rectrices narrower and more pointed, not more than 4 mm. wide at base of paler gray tip.
    - Calypte costæ*, adult female (p. 623).
  - bb. Smaller (wing less than 35, tail less than 20, exposed culmen less than 12); middle rectrices metallic blue or greenish blue.
    - Calypte helenæ*, adult female (p. 626).

#### CALYPTE ANNA (Lesson).

##### ANNA HUMMING BIRD.

*Adult male*.—Whole head except occiput and auricular region brilliant metallic rose red, changing to solferino and violet in certain lights (more golden or even greenish in position *b*), the latero-posterior feathers of throat elongated; a small postocular spot or streak of white; occiput (except laterally, where at least partly metallic

purplish red), hindneck, back, scapulars, wing-coverts, and rump metallic bronze-green, the upper tail-coverts and middle pair of rectrices similar but usually less bronzy, or more bluish, green; tail (except middle pair of rectrices) dark grayish, faintly glossed with greenish bronze, the rectrices blackish terminally and medially; remiges brownish slate or dusky, faintly glossed with purplish; chest pale brownish gray or dull grayish white, the feathers darker brownish gray beneath surface; rest of under parts deeper grayish, strongly glossed with metallic bronze-green laterally, the feathers more or less distinctly margined with paler grayish; femoral tufts and conspicuous tuft on each side of rump white; under tail-coverts brownish gray glossed with bronze-green or greenish bronze (especially on shorter coverts) and broadly margined with pale gray or grayish white; bill dull black; iris dark brown; feet dusky; length (skins), 90-102 (96); wing, 48.5-51 (49.7); tail, 30.5-32.5 (31.3); middle rectrices, 23.5-25.5 (24.4); exposed culmen, 17.5-20 (18.2).<sup>a</sup>

*Adult female*.—Above metallic bronze or bronze-green, duller on pileum, the forehead sometimes dull grayish brown; middle pair of rectrices metallic green or bronze-green, sometimes dusky terminally, the next pair similar, but with terminal portion (broadly) blackish; third pair similar to second, but more extensively blackish terminally and narrowly tipped with white; two outer pairs with basal half (more or less) brownish gray, the tip pale brownish gray or dull grayish white (broader on outermost rectrix), the intermediate (subterminal) portion black; remiges brownish slate or dusky, faintly glossed with purplish; chin and throat pale brownish gray or dull grayish white, the center of throat usually with an admixture of metallic red or purplish red feathers, sometimes with a considerable patch of metallic reddish; the lower throat, at least, with mesial guttate spots or broad streaks of dusky grayish brown or dull bronzy; rest of under parts as in the adult male, but slightly paler and less extensively glossed with metallic greenish; bill, etc., as in adult male; length (skins), 84-99 (91); wing, 48-51 (49.6); tail, 25-28.5 (27.2); exposed culmen, 17-22 (18.8).<sup>a</sup>

*Young male*.—Similar to the adult female, but tail more rounded, lateral rectrices with dark subterminal portion duller blackish and less sharply contrasted with dull grayish of basal portion, feathers of upper parts very narrowly and indistinctly margined with pale buffy grayish and (at least older individuals) with metallic purplish red feathers on crown as well as on throat.

*Young female*.—Similar to the adult female, but feathers of upper parts narrowly margined with pale brownish or dull buffy and throat without metallic red feathers.

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<sup>a</sup> Ten specimens.

California in general (except parts of northern coast district?), north to Shasta County (Wagon Camp, Mount Shasta; McCloud River), Siskiyou County (Yreka), and Mendocino County (Mount Sanhedrin), east to Sierra Nevada (near Pyramid Peak; Nevada, etc.), and southward (as a resident) to coast district of northern Lower California; during migration to Santa Barbara Islands (Santa Catalina Island, December; Santa Cruz Island), Guadalupe Island, Cerros Island, Todos Santos Island, and Los Coronados Islands, San Pedro Martir Mountains, near Tia Juana, etc., Lower California, and southeastward to southern Arizona (Camp Grant, September; Santa Catalina Mountains, October), and northern Sonora (San José Mountains, August).

*Ornismya anna* LESSON, Hist. Nat. Ois.-Mouch., 1829, pp. xxxi, xlvi, 205, pl. 74 (California; coll. Rivoli); Suppl. Ois.-Mouch., 1831, 115, pl. 7; Traité d'Orn., i, 1831, 281; ii, 1831, pl. 74; Index Gen. et Synop. Troch., 1832, p. xxxvi.

*Trochilus anna* JARDINE, Nat. Libr., Humming-birds, i, 1834, 137, pl. 6.—BONAPARTE, Comp. and Geog. List, 1838, 10.—AUDUBON, Orn. Biog., v, 1839, 238, pl. 425; Synopsis, 1839, 170; Birds Am., oct. ed., iv, 1842, 188, pl. 252.—HEERMANN, Journ. Ac. Nat. Sci. Phila., 2d ser., ii, 1853, 269 (California); Rep. Pacific R. R. Surv., x, pt. iv, no. 2, 1859, 56 (San Diego and Cosumnes R., California).—CASSIN, Illustr. Birds Cal., Tex., etc., 1854, 147.—NEWBERRY, Rep. Pacific R. R. Surv., vi, pt. ii, 1857, 79 (California).—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886, no. 431.—SCOTT, Auk, iii, 1886, 431 (Santa Catalina Mts., Arizona, 5,000 ft., 1 spec., Oct. 1).—BRYANT (W. E.), Bull. Calif. Ac. Sci., ii, 1887, 292 (Guadalupe I., Lower California); 1889, 289 (Villaderes, between Tia Juana and San Pedro Martir Mts., Cerros I. and Guadalupe I., Lower California).—TOWNSEND, Proc. U. S. Nat. Mus., x, 1887, 208 (McCloud R., n. California; habits; descr. nest).—THAYER and BANGS, Condor, ix, 1907, 78 (Cerros I.).

*T[rochilus] anna* RIDGWAY, Man. N. Am. Birds, 1887, 312.—HARTERT, Das Tierreich, Troch., 1900, 203.

[*Trochilus*] *anna* REICHENBACH, Troch. Enum., 1855, 10, pl. 834, figs. 4963–4965.—GRAY, Hand-list, i, 1869, 145, no. 1867.—SHARPE, Hand-list, ii, 1900, 140.

*Trochilus annæ* EVERMANN, Auk, iii, 1886, 180 (Ventura Co., California).

[*Trochilus*. *0. Atthis*] *anna* REICHENBACH, Aufz. der Colibr., 1854, 12.

*C[rochilus] anna* JARDINE, Nat. Libr., Hummingbirds, ii, 1833, 167.

*M[clisuga] anna* GRAY, Gen. Birds, i, Dec., 1848, 113.

*Calliphlox anna* GAMBEL, Proc. Ac. Nat. Sci. Phila., 1846, 3; Journ. Ac. Nat. Sci. Phila., 2d ser., i, 1847, 32 (California; habits).—CABANIS, in Wiegmann's Archiv für Naturg., xiv, pt. i, 1849, 94.

[*Scelosphorus*] *anna* BONAPARTE, Consp. Av., i, 1850, 82.

[*Scelosphorus*] *anna* BONAPARTE, Rev. et Mag. de Zool., 1854, 257.

*Scelosphorus anna* SCLATER, Proc. Zool. Soc. Lond., 1857, 126 (San José Valley, California); Cat. Am. Birds, 1862, 297 ("Mexico").—COUES, Check List, 1873, no. 279.—NELSON, Proc. Bost. Soc. N. H., xvii, 1875, 361 (Nevada, California).

*Calypte annæ* GOULD, Mon. Troch., pt. xi, May, 1856, pl. 5; vol. iii, 1861, pl. 135; Introd. Troch., oct. ed., 1861, 88.—HENSHAW, Rep. Orn. Spec. Wheeler's Surv., 1873 (1874), 130, 162 (Camp Grant, Arizona, Sept.); 1867, 257 (Tejón Mts. and Ft. Tejón, California); Zool. Expl. W. 100th Merid., 1875, 375 (Camp Grant).—RIDGWAY, Bull. Essex Inst., vi, 1874, 171 (Sacramento,



- California); Orn. 40th Parallel, 1877, 558 (Sacramento); Proc. U. S. Nat. Mus., iii, 1880, 187, 314, 338; Nom. N. Am. Birds, 1881, no. 338.—BOUCARD, Notes Troch. du Mex., 1875, 7; Ann. Soc. Linn. Lyon, xxii, 1876, 20 ("Mexico;" California); Gen. Hum. Birds, ii, 1892, 5.—MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., iv, livr. 1, 1877, 73 (California).—ELLIOT, Classif. and Synop. Troch., 1879, 107.—BELDING, Proc. U. S. Nat. Mus., i, 1879, 393, 427 (Murphys, Big Trees, and Copperopolis, California, resident); v, 1883, 531 (Cerro I., April).—SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 403.—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 359.—ANTHONY, Zoö, iv, 1893, 237 (San Pedro Martir Mts., Lower California, May; resident on coast).
- C[alypte] annae* HEINE, Journ. für Orn., 1863, 208.
- C[alypte] annæ* COUES, Key N. Am. Birds, 2d ed., 1884, 464.
- [*Calypte*] *annæ* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 84.
- [*Calypte*] *annae* MULSANT, Ann. Soc. Linn. Lyon, n. s., xxii, 1876, 227.
- Calypte anna* COOPER, Orn. Cal., 1870, 358; Proc. Calif. Ac. Sci., 1870, 78 (Santa Catalina I.); Proc. U. S. Nat. Mus., iii, 1880, 250 (dates of arrival at Haywards, California).—BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, pl. 47, fig. 7.—RIDGWAY, Rep. U. S. Nat. Mus. for 1890 (1891), 334 (monogr.; habits); Man. N. Am. Birds, 2d ed., 1896, 598.—AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Auk, x, 1893, 62; Check List, 2d ed., 1895, no. 431; 3d ed., 1910, 203.—FISHER (A. K.), North Am. Fauna, no. 7, 1893, 58 (Reche Cañon and Morro Bay, California).—HARTERT (E. and C.), Novit. Zool., i, 1894, 22 (descr. nest and eggs).—BENDIRE, Life Hist. N. Am. Birds, ii, 1895, 206.—GRINNELL (J.), Auk, xv, 1898, 235 (Santa Catalina I., Dec.); Pub. 2, Pasadena Ac. Sci., 1898, 28 (Los Angeles Co., resident); Condor, vi, 1904, 42 (Palm Springs, Riverside Co., Dec.); Univ. Calif. Pub. Zool., v, 1908, 71 (San Bernardino Mts. up to 5,000 ft., breeding).—VAN DENBURG, Proc. Am. Philos. Soc., xxxviii, 1899, 164 (Santa Clara Co.; habits).—MERIAM, North Am. Fauna, no. 16, 1899, 117 (Wagon Camp, Mt. Shasta, breeding).—BAILEY (Florence M.), Handb. Birds W. U. S., 1902, 237.—RAY, Auk, xx, 1903, 124 (near Pyramid Peak, centr. Sierra Nevada, 1 spec., July).—STONE, Proc. Ac. Nat. Sci. Phila., 1904, 582 (Mt. Sanhedrin, Mendocino Co.).—CHILDS, Warbler, i, 1905, 45 (habits).—KAEDING, Condor, vii, 1905, 134 (Todos Santos I., Lower California, March).—SHARPE, Condor, ix, 1907, 88 (San Diego Co., breeding).—RICHARDSON, Condor, x, 1908, 66 (Santa Catalina I.).—LINTON, Condor, x, 1908, 127 (Santa Cruz I.).—OSBURN, Condor, xi, 1909, 137 (Los Coronados Islands).
- Calypte annæ* DE OCA, Troq. de Mex., 1875, pl. (8), fig. 29.
- Calypte annæ* DE OCA, La Naturaleza, iii, 1875, 163; Troq. de Mex., 1875, 40.
- Atthis anna* BAIRD, Rep. Pacific R. R. Surv., ix, 1858, 137; Cat. N. Am. Birds, 1859, no. 105.—XANTUS, Proc. Ac. Nat. Sci. Phila., 1859, 190 (Ft. Tejon).—FEILNER, Ann. Rep. Smithson. Inst. for 1864, 429, in text (Yreka, Siskiyou Co., breeding).
- A[tlhis] annæ* CABANIS and HEINE, Mus. Hein., iii, 1860, 55.
- "*Calliope anna* MONTES DE OCA, in Natural., p. 163, pl. 8, fig. 29." (Mulsant and Verreaux.)
- Zephyritis annæ* MULSANT and VERREAUX, Classif. Troch., 1866, 88.
- Trochilus icterocephalus* NUTTALL, Man. Orn. U. S. and Can., ed. 2, i, 1840, 712 (=male with forehead stained with yellow pollen).

## CALYPTE COSTÆ (Bourcier).

## COSTA'S HUMMING BIRD.

*Adult male*.—Head, except postocular region, very brilliant metallic violet or amethyst purple, changing to violet-blue or even greenish and more reddish purple (magenta) in certain lights, the latero-posterior feathers of throat much elongated; rest of upper parts, including four middle rectrices, rather dull metallic bronze-green or greenish bronze; tail (except four middle rectrices) grayish brown or brownish gray, faintly glossed with bronze-greenish, the rectrices darker on shafts and toward tip; remiges brownish slate or dusky, faintly glossed with purplish; foreneck very pale brownish gray or grayish white, passing into more decidedly grayish on chest and median line of breast and abdomen; rest of under parts metallic bronze-green or greenish bronze, the feathers more or less distinctly margined with dull grayish; femoral tufts and conspicuous tuft on each side of rump white; under tail-coverts light brownish gray or bronzy centrally, margined with whitish; bill dull black; iris dark brown; feet dusky; length (skins), 77–90 (83); wing, 43–45.5 (44.4); tail, 22–24.5 (22.6); middle rectrices, 17.5–20 (18.6); exposed culmen, 16–19 (17.2).<sup>a</sup>

*Adult female*.—Above rather dull metallic bronze-green or greenish bronze, much duller on pileum, where (at least on forehead) sometimes dull grayish brown; middle pair of rectrices bronze-green, the next pair similar but with terminal portion black; third pair tipped with dull white or pale brownish gray, extensively black subterminally and dull brownish gray basally, the gray and black separated (at least on outer web) by more or less of metallic bronze-green; fourth and outermost pairs with whitish tip broader, basal grayish more extended, and with little if any metallic greenish between the gray and black; remiges brownish slate or dusky, faintly glossed with purplish; under parts pale brownish gray, paler (dull whitish) on chin, upper throat, and under tail-coverts; femoral tufts and tuft on each side of rump white; bill, etc., as in adult male; length (skins), 74–91 (81); wing, 43.5–46 (44.7); tail, 21.5–25.5 (23.6); culmen, 17–20 (18.2).<sup>b</sup>

*Young male*.—Similar to the adult female but feathers of upper parts more or less distinctly margined with pale grayish buffy, tail double-rounded instead of rounded, and throat with a central patch of metallic purple or violet feathers (in older individuals similar feathers on crown also).

*Young female*.—Similar to the adult female but feathers of upper parts margined with pale grayish buffy.

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<sup>a</sup> Thirteen specimens.<sup>b</sup> Twelve specimens.

Southern California and whole of Lower California, including islands of San Benito, Todos Santos, Santa Margarita, and Cerros; north, regularly, to Ventura, Los Angeles, and Inyo Counties, casually to San Francisco, Haywards, and Oakland; east to southern Nevada (Panaca; Charleston Mountains; Mount Magruder; Ash Meadows; Pahrnagat Valley; Vegas Wash; Muddy Mountains; Bend of Colorado River), southern Utah (Beaver Dam Mountains), Arizona (Camp Grant; Santa Rita, Santa Catalina, Huachuca, and C6copah Major Mountains; Tinejas; Atlas; Tucson; San Pedro River; Bill Williams Fork, etc.), and southern New Mexico;<sup>a</sup> breeding, locally, throughout its general range; during migration southward through northwestern Mexico as far as Mazatlán.

*Ornismya costae* BOURCIER, Rev. Zool., 1839, 294 (California); Ann. Sci. Phys. et Hist. Nat. Lyon, iii, March, 1840, 225, pl. 2 (California).—LONGUEMARE and PARZUDAKI, Rev. Zool., 1840, 71 ("Madeline Bay, California").—BAIRD, in Stansbury's Gt. Salt Lake, 1852, 326.—PRÉVOST and DES MURS, Voy. "Vénus," 1855, 194, atlas, pl. 2, figs. 1, 2.

*M[ellisuga] costae* GRAY, Gen. Birds, i, Dec., 1848, 113.

[*Selasphorus*] *costae* BONAPARTE, Consp. Av., i, 1850, 82.

[*Selasphorus*] *costae* BONAPARTE, Rev. et Mag. de Zool., 1854, 257.—COUES, Key N. Am. Birds, 1872, 185.

*Selasphorus costae* SCLATER, Cat. Am. Birds, 1862, 297.—COUES, Check List, 1873, no. 280.

[*Trochilus. ♂ Atthis*] *costae* REICHENBACH, Aufz. der Colibr., 1854, 12.

[*Trochilus*] *costae* REICHENBACH, Troch. Enum., 1855, 10.

[*Trochilus*] *costae* GRAY, Hand-list, i, 1869, 145, no. 1868.—SHARPE, Hand-list, ii, 1900, 140.

*T[rochilus] costae* RIDGWAY, Man. N. Am. Birds, 1887, 312.

*T[rochilus] costae* HARTERT, Das Tierreich, Troch., 1900, 202.

*Trochilus costae* AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886, no. 430.—EVERMANN, Auk, iii, 1886, 180 (Ventura Co., California, rare).—SCOTT, Auk, iii, 1886, 430 (Santa Catalina Mts., San Pedro R., and Riverside, Arizona).—MORCOM, Bull. Ridgw. Orn. Club, no. 2, 1877, 42 (Cahuilla Valley, s. California, breeding; habits).—BRYANT (W. E.), Proc. Calif. Ac. Sci., ser. 2, 1889, 289 (Santa Margarita I., Cerros I., and bet. Tia Juana and San Pedro Martir Mts., Lower California, up to 10,000 ft.).—THAYER and BANGS, Condor, ix, 1907, 78 (Cerros I.), 81 (San Benito I.).

*Calypte costae* GOULD, Mon. Troch., pt. xi, May, 1856, pl. 7; vol. iii, 1861, pl. 134; Introd. Troch., oct. ed., 1861, 88.—COOPER, Orn. Cal., 1870, 360; Proc. Calif. Ac. Sci., 1870, 74 (Colorado Valley); 1876, 90 (Haywards, Alameda Co., 1 spec.).—BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 457, pl. 47, fig. 8.—HENSHAW, Rep. Orn. Spec. Wheeler's Surv., 1873 (1874), 162 (Arizona).—BOUCARD, Notes Troch. du Mex., 1875, 7; Gen. Hum. Birds, 1895, 4.—DE OCA, La Naturaleza, iii, 1875, 166; Troq. de Mex., 1875, 44, pl. (9), fig. 32.—ELLIOT, Classif. and Synop. Troch., 1879, 107.—RIDGWAY, Proc. U. S. Nat. Mus., iii, 1880, 187, 314 ("Guatemala"—error; Mazatlán; Ft. Tejon; Cape San Lucas; Arizona); v, 1883, 542 (descr. nest and eggs); Nom. N. Am. Birds, 1881, no. 337; Rep. U. S. Nat. Mus. for 1890 (1891), 337, pl. 39 (monogr.); Man. N. Am. Birds, 2d ed., 1896, 598.—BELDING, Proc. U. S. Nat. Mus., v, 1882, 528 (San Quintín Bay,

<sup>a</sup> Bailey, Handb. Birds W. U. S., p. 237.



- Lower California, May), 530 (Santa Rosalia Bay), 531 (Cerros I., breeding), 542 (San José del Cabo, Cape San Lucas, Miraflores, and La Paz, Lower California, breeding); vi, 1883, 343 (Guaymas, Sonora), 348 (mts. Lower California below 2,000 ft.).—BREWSTER, Bull. Nutt. Orn. Club, vii, 1882, 210 (Tucson, Arizona); Bull. Mus. Comp. Zool., xli, 1902, 112 (Cape San Lucas district; crit., habits, etc.).—COUES, Check List, 2d ed., 1882, no. 415.—STEPHENS, Auk, i, 1884, 354 (Colorado Desert).—GAULT, Auk, ii, 1885, 309–311 (San Bernardino Co.; descr. nest and eggs).—SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 404.—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 359.—ALLEN, Bull. Am. Mus. N. H., v, 1893, 36 (El Pinita, Sonora, Oct.).—ANTHONY, Zoë, iv, 1893, 237 (San Pedro Martir Mts., Lower California, up to 7,500 ft., breeding); Auk, xii, 1895, 140 (San Fernando, Lower California).—AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Auk, x, 1893, 62; Check List, 2d ed., 1895, no. 430; 3d ed., 1910, 203.—HARTERT (E. and C.), Novit. Zool., i, 1894, 22 (California; descr. nest and eggs).—BENDIRE, Life Hist. Birds N. Am., ii, 1895, 202.—GRINNELL (J.), Pub. no. 1, Pasadena Ac. Sci., 1897, 15 (San Clemente I., 1 spec., March 30); Pub. no. 2, 1878, 28 (Los Angeles Co., summer res.); Condor, vi, 1904, 42 (Palm Springs, Riverside Co., Dec.); Univ. Calif. Pub. Zool., v, 1898, 71 (base of San Bernardino Mts., 2,500 ft., breeding).—BAILEY (Florence M.), Handb. Birds W. U. S., 1902, 236, fig. 310.—FISHER (A. K.), North Am. Fauna, no. 7, 1893, 56 (Amaragosa Desert, Coso, Argus, Funeral, Panamint, and Grapevine Mts., Death Valley, etc., s. e. California; Mt. Magruder, Ash Meadows, Pahrangat Valley, Charleston Mts., Vegas Wash, Muddy Mts., Bend of Colorado R., etc., s. Nevada, breeding; Beaver Dam Mts., s. Utah; habits).—STONE, Proc. Ac. Nat. Sci. Phila., 1905, 682 (Cocopah Major Mts., Arizona, breeding).—SWARTH, Pacific Coast Avifauna, no. 4, 1904, 17 (Huachuca Mts., Arizona, up to 5,500 ft., breeding chiefly in valleys); Condor, vii, 1905, 79 (Santa Rita Mts., Arizona).—KAEDING, Condor, vii, 1905, 134 (Todos Santos and San Benito islands and Turtle Bay, Lower California, March, April).—SHARP, Condor, ix, 1907, 88 (San Diego Co., breeding).—VISHER, Auk, xxvii, 1910, 282 (Tucson, Arizona, summer res.).
- C[alypte] costae* HEINE, Journ. für Orn., 1863, 208.
- [Calypte] costae* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 84.
- C[alypte] costae* COUES, Key N. Am. Birds, 2d ed., 1884, 464.
- Atthis costae* BAIRD, Rep. Pacific R. R. Surv., ix, 1858, 138; ed. 1860 (Birds N. Am.), 138, pl. 19; Cat. N. Am. Birds, 1859, no. 106; Rep. U. S. and Mex. Bound., ii, pt. 2, 1859, 22, pl. 19 (Bill Williams Fork, Arizona).—XANTUS, Proc. Ac. Nat. Sci. Phila., 1859, 190 (Ft. Tejon).—COUES, Proc. Ac. Nat. Sci. Phila., 1866, 57 (Bill Williams Fork and Ft. Mojave); 1868, 82 (s. Arizona).—BOUCARD, Ann. Soc. Linn. Lyon, xxii, 1875, 20.
- Zephyritis costae* MULSANT and VERREAUX, Classif. Troch., 1866, 88.
- [Leucaria] costae* MULSANT, Ann. Soc. Linn. Lyon, n. s., xxii, 1876, 227.
- Leucaria costae* MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., iv, livr. 1, 1877, 69, pl. 104; Suppl., pl. 6.
- [Calypte] costae* SIMON, Cat. Troch., 1897, 39.

### CALYPTE HELENÆ (Lembeye).

#### HELENA'S HUMMING BIRD.

*Adult male*.—Whole head, except postocular region (narrowly) very brilliant metallic rose red (slightly more purplish red on pileum), the feathers on sides of throat much elongated; hindneck, back, scapu-

lars, wing-coverts, rump, and upper tail-coverts bright metallic bluish green or greenish blue; tail metallic greenish blue (decidedly more bluish than back, etc.), the lateral rectrices blackish terminally; remiges dull black or dusky, faintly glossed with violet; chest grayish white, passing posteriorly into more decided gray on median portion of breast and abdomen; sides and flanks metallic bluish green, more or less intermixed with grayish; under tail-coverts grayish white with a subterminal spot of metallic bluish green; femoral tufts and tuft on each side of rump white; bill dull black; iris dark brown; feet dusky; length (skins), 55–62 (58); wing, 27.5–29 (28.4); tail, 16–16.5 (16.2); exposed culmen, 10.<sup>a</sup>

*Adult female*.—Above metallic bluish green, duller on pileum, more bluish posteriorly; middle rectrices bright metallic greenish blue, the remaining rectrices bright greenish blue basally (for more than half their length), black terminally or subterminally, the two or three outermost tipped with white (broadly on lateral rectrix); remiges dusky, faintly glossed with violaceous; superciliary, auricular, and suborbital regions brownish gray (nearly drab-gray); a blackish loreal spot or streak and a small whitish postocular spot; under parts pale brownish gray, fading into white on anal region and under tail-coverts; femoral tufts white; bill, etc., as in adult male; length (skins), 57–66 (62); wing, 32–34.5 (33.1); tail, 16.5–19.5 (17.9); exposed culmen, 10.5–11.5 (11.1).<sup>b</sup>

*Immature male*.—Similar to the adult female, but usually more bluish above.

Island of Cuba (Cardenas; Santiago; Bayate; Holquín; Figuabas).

*Orthorhynchus helenæ* LEMBEYE, Aves de la Isla de Cuba, 1850, 70, pl. 10, fig. 2 (Cardenas, Cuba; ex Gundlach, manuscript).—BREWER, Proc. Bost. Soc. N. H., vii, 1860, 306.

*Orthorhynchus helenæ* GUNDLACH, Journ. für Orn., 1861, 414.

[*Orthorhynchus*] *helenæ* GUNDLACH, Journ. für Orn., 1861, 334.

*Calypte helenæ* GOULD, Mon. Troch., pt. xi, May, 1856; vol. iii, 1861, pl. 136; Introd. Troch., oct. ed., 1861, 88.—GUNDLACH, Repert. Fisico-Nat. Cuba, 1866, 291; Journ. für Orn., 1874, 144 (habits); Contr. Orn. Cuba, 1876, 109, 272; Auk, viii, 1891, 187 (crit.; habits, etc.); Orn. Cub., ed. 1895, 132.—ELLIOT, Ibis, 1872, 354 (synonymy); Classif. and Synop. Troch., 1879, 108.—MULSAN and VERREAUX, Hist. Nat. Ois.-Mouch., iv, livr. 1, 1877, 77, pl. 105; Suppl., pl. 7.—CORY, Auk, iii, 1886, 354; Birds West Ind., 1889, 149; Cat. West Ind. Birds, 1892, 13, 107, 128, 144.—SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 405.—BOUCARD, Gen. Hum. Birds, ii, 1892, 6.—RIDGWAY, Man. N. Am. Birds, 2d ed., 1896, 598.

*C[alypte] helenæ* HEINE, Journ. für Orn., 1863, 208.

*C[alypte] helenæ* BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 453.—RIDGWAY, Rep. U. S. Nat. Mus. for 1890 (1891), 334 (diagnosis, etc.).

[*Calypte*] *helenæ* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 84.—CORY, List Birds West Ind., 1885, 18.

<sup>a</sup> Four specimens.

<sup>b</sup> Nine specimens.

- [*Calypte*] *helenae* Mulsant, Ann. Soc. Linn. Lyon, n. s., xxii, 1876, 227.  
*Atthis helenae* Lawrence, Ann. Lyc. N. Y., vii, 1860, 263 (crit.).  
 [*Trochilus*] *helenæ* Gray, Hand-list, i, 1869, 145, no. 1869.—Sharpe, Hand-list, ii, 1900, 140.  
*T[rochilus] helenæ* Ridgway, Man. N. Am. Birds, 1887, 313.  
*T[rochilus] helenae* Hartert, Das Tierreich, Troch., 1900, 203.  
*Trochilus helenæ* Menegaux, Rev. Franç. d'Orn., no. 2, 1909, 26 (Figuabas, e. Cuba).  
*Orthorhynchus boothi* Gundlach, Journ. für Orn., 1856, 99; 1859, 347 (Santiago, e. Cuba).  
*Zephyrites (Calypte) elviræ* Mulsant and Verreaux, Classif. Troch., 1866, 88.

### Genus ARCHILOCHUS Reichenbach.

- Trochilus* (not of Linnæus, 1758? <sup>a</sup>) of Authors.  
*Cynanthus* (not of Swainson, 1827) Boie, Isis, 1831, 547. (Type, *Trochilus colubris* Linnæus.)  
*Colubris* (not of Hübner, 1793) Wood (T. C.), Orn. Guide, Jan., 1837, 137. (Type, *C. rubens* Wood = *Trochilus colubris* Linnæus.)—Reichenbach, Syst. Av. Nat., 1849, pl. 40. (Type, *Trochilus colubris* Linnæus.)  
 [*Selasphorus*] *β. Archilochus* Reichenbach, Journ. für Orn., 1853, Extra heft, 1854 ("Aufz. der Colibr."), 13. (Type, *Trochilus alexandri* Bourcier and Mulsant.)  
*Ornismia* (not *Ornismya* Lesson, 1829) Mulsant and Verreaux, Mém. Soc. Imp. Sci. Nat. Cherb., xii (sér. 2, ii), 1866, 235 (Classif. Troch., 1865, 91). (Type, *Trochilus alexandri* Bourcier and Mulsant.)  
*Mellisuga* (not of Brisson) Sundevall, Av. Met. Nat. Disp. Tent., pt. ii, 1873, 91. (Type, *Trochilus colubris* Linnæus.)

Small Trochilidæ (length about 75–100 mm.) with bill as long as or longer than head, rather slender, straight; six innermost primaries abruptly narrower than the rest, with the edge of inner web forming a more or less prominent angle subterminally; adult males with the "gorget" not elongated laterally, pileum concolor with the back or more dusky, the tail deeply emarginate, but with outer pair of rectrices shorter than the next, all the rectrices except middle pair pointed terminally.

Bill as long as or longer than head, rather slender, straight, terete; culmen rounded except at base where contracted into a narrow ridge; tomia smooth; mandible with the usual lateral median groove. Nasal operculum moderately broad and convex, mostly (sometimes wholly) covered by the appressed frontal feathering, which anteriorly extends to beyond anterior end of nostrils, forming a short angle or antia on each side of culmen. Wing a little more than twice to nearly two and a half times as long as exposed culmen; outermost primary longest, strongly incurved terminally, in adult male of *A. colubris* much narrower than the next and obtusely pointed terminally; six innermost (proximal) primaries abruptly, and in adult males con-

<sup>a</sup> The type of *Trochilus* Linnæus, according to recent authorities, is *Trochilus polytmus* Linnæus (type of *Aithurus* Cabanis and Heine), as designated by Gray in 1840; see Allen, Bull. Am. Mus. Nat. Hist., xxiv, 1908, 12.



spicuously, smaller than the rest, with a more or less prominent angle on edge of inner web near tip. Tail of adult males about three-fifths to two-thirds as long as wing, slightly forked or deeply emarginate (but with outermost rectrix shorter than the next pair), the middle rectrices very broad, with rounded tip, the others gradually decreasing in width to the lateral pair, all contracted or narrowed terminally and obtusely pointed; in adult females less than three-fifths as long as wing, double-rounded, the lateral rectrices subcuneate terminally, the outer pair not distinctly incurved.

*Coloration*.—Above metallic bronze-green, including middle rectrices, the pileum duller or darker; beneath mostly dull whitish or grayish. Adult males with chin (sometimes upper throat also) opaque black, the throat (at least lower portion) bright metallic red or violet, the lateral rectrices wholly purplish black; adult females with chin and throat whitish (sometimes flecked or streaked with dusky), and lateral rectrices tipped with white (the outer pair sometimes wholly white), black subterminally, grayish or bronze-greenish basally.

*Range*.—Temperate and subtropical North America; one species migratory in winter as far as western Panamá. (Two species.)

#### KEY TO THE SPECIES OF ARCHILOCHUS.

- a. Throat (at least partly) bright metallic red or violet, the chin (sometimes upper throat also) velvety black; tail forked, the lateral rectrices wholly purplish black. (*Adult males*.)
  - b. Throat bright metallic red. (Eastern North America; south in winter over nearly whole of Mexico and Central America to western Panamá and to Cuba.)  
*Archilochus colubris*, adult male (p. 629).
  - bb. Throat purple or violet.
    - c. Lower half of throat violet to violet-blue; tail shorter, the lateral rectrices 23.5–28 (25.6), middle rectrices 20.5–23.5 (21.9). Southern British Columbia to northern and western Mexico.)  
*Archilochus alexandri*, adult male (p. 633).
    - cc. Greater part of throat magenta purple; tail longer, the lateral rectrices 30, middle rectrices 23. (Santa Barbara, California.)  
*Archilochus violajugulum*,<sup>a</sup> adult male (p. 636).
- aa. Throat and chin dull white (sometimes flecked with dusky); tail double-rounded, the lateral rectrices broadly tipped with white and with a basal area of gray or greenish. (*Adult females*.)
  - b. Smaller; wing 43.5–45.5 (44.5), tail 25–26.5 (25.6), exposed culmen 17–18.5 (18.2); under parts more whitish. *Archilochus colubris*, adult female (p. 629).
  - bb. Larger; wing 46–48.5 (47), tail 26–27.5 (26.8), exposed culmen 24–26 (24.8); under parts more grayish. . . . *Archilochus alexandri*, adult female (p. 633).

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<sup>a</sup> Probably a hybrid of *Archilochus alexandri* and *Calypte anna*.

## ARCHILOCHUS COLUBRIS (Linnæus).

## RUBY-THROATED HUMMING BIRD.

*Adult male*.—Above metallic bronze-green, including middle pair of rectrices; remiges dark brownish slate or dusky, faintly glossed with purplish; tail (except middle pair of rectrices) dark bronzy purplish or purplish bronzy black; chin, malar region, suborbital region, and auricular region velvety black; a small postocular spot of white; whole throat brilliant metallic red (nearest geranium red in position *a*) changing to golden or even greenish in position *b*; chest dull brownish white or very pale buffy brownish gray, passing gradually into deeper brownish gray on breast and abdomen, the sides and flanks darker and overlaid by metallic bronze-green; femoral tufts and tuft on each side of rump white; under tail-coverts brownish gray (sometimes glossed with greenish bronze) centrally, broadly margined with dull white; bill dull black; iris dark brown; feet dusky; length (skins), 76–89 (83); wing, 37–40 (38.5); tail, 25.5–28.5 (27); middle rectrices, 18–20.5 (19); exposed culmen, 15–17 (15.9).<sup>a</sup>

*Adult female*.—Above metallic bronze-green, golden green, or greenish bronze, including middle pair of rectrices; three outer rectrices, on each side, broadly tipped with white (the white tip on third rectrix smaller and mostly confined to inner web), metallic bronze-green for basal half (more or less) the intervening portion black; remiges dark brownish slate or dusky, faintly glossed with purplish; a small postocular spot of dull white; auricular region deep dull grayish; lores dusky; malar region and under parts dull grayish white or very pale brownish gray (usually more decidedly whitish on chin, throat, and malar region), the flanks and shorter under tail-coverts usually more or less tinged with pale buffy brownish; femoral tufts and tuft on each side of rump white; bill, etc., as in adult male; length (skins), 78–89 (85); wing, 43.5–45.5 (44.5); tail, 25–26.5 (25.6); middle rectrices, 22–24.5 (23); exposed culmen, 17–19.5 (18.2).<sup>a</sup>

*Young male*.—Similar to the adult female, but feathers of upper parts very narrowly and indistinctly margined terminally with pale grayish buffy, throat with small mesial streaks of dusky, and under parts usually more strongly tinged with buffy brownish, especially on sides and flanks.

*Young female*.—Similar to the young male, but throat without dusky streaks.

Eastern North America; north, regularly to southern Labrador (casually to Davis Inlet), Quebec, Ontario, and Keewatin (to about latitude 52°), and in the interior to northern Alberta (near Lake

<sup>a</sup> Ten specimens.

Athabaska, latitude 59°) and central Alberta; west to about middle portion of Great Plains (along streams); breeding southward to middle Florida (Tarpon Springs) and along the Gulf coast to west-central Texas (Bexar, Tom Green, and Concho counties); wintering from middle and southern Florida (Tarpon Springs, Punta Rassa, Key West, Dry Tortugas, etc.) and southern Texas (Bexar, Lee, and Cameron counties, etc.) southward over greater part of Mexico, in States of Tamaulipas (Sierra de Victoria; Tamasi; Tampico; Escandón), Puebla, Vera Cruz (Miradór; Jalapa; Córdoba: Orizaba; Coátepec; Maltrata; Catemaco; Misantla; Playa Vicente), Mexico (Valley of Mexico; Ajusco; Amecameca), Morelos (Cuernavaca; Turrúceres), Michoacán (La Salada), Jalisco (Bolaños; Volcán de Colima), Sinaloa (Escuinapa), Guerrero (Chilpancingo; Acahuitzotla; near Ometepe; El Limón; Tecpán; Venta de Zopilote), Oaxaca (Tehuántepec; 15 miles west of Oaxaca; Santa Efigénia; Tonagua), Tabasco (Frontera), Chiapas (Comitán), and Yucatan (Mérida; Labna; Tabí; La Vega; Schkolak; Progreso; Chichen-Itza; Cozumél Island; Holbox Island), Guatemala (Dueñas; Cobán; San Gerónimo; Acatenango; Guatemala City; Salamá; Gualán; Panajachál; Lake Amatitlán; Rincon de San Marcos; Santa Ana de Petén; between Cobán and Chiséc), Nicaragua (Ometepe) and Costa Rica (Las Cruces de la Candelaria; Volcán de Irazú; San José; Turrúcares; Santo Domingo de San Mateo; Juan Viñas; Bebedero; Bagaces) to western Panamá (Volcán de Chiriquí, Verágua); also Bahamas (New Providence Island), Cuba, Porto Rico, and Bermudas.

[*Trochilus*] *colubris* LINNÆUS, Syst. Nat., ed. 10, i, 1758, 120 (based on *Red-throated Humming Bird*, *Avis mellivora, minor, gutture rubro*, Edwards, Nat. Hist., i, pl. 38; *Humming Bird* Catesby, Carolina, i, 65, pl. 65); ed. 12, i, 1766, 191.—GMELIN, Syst. Nat., i, 1788, 492.—LATHAM, Index Orn., i, 1790, 312.

*Trochilus colubris* VIEILLOT, Ois. Dor., i, 1801, 66, 69, 70, pls. 31, 32, 33; Ois. Am. Sept., i, 1807, 73, pls. 31, 32; Nouv. Dict. d'Hist. Nat., vii, 1817, 371.—TEMMINCK, Cat. Syst., 1807, 83.—WILSON, Am. Orn., ii, 1810, 26, pl. 10, figs. 3, 4.—JARDINE, Nat. Libr., Humming-birds, i, 1833, 85, pl. 5.—BONAPARTE, Synop. Birds U. S., 1828, 98; Geog. and Comp. List, 1838, 10; Consp. Av., i, 1850, 81; Rev. et Mag. de Zool., 1854, 256.—SWAINSON and RICHARDSON, Fauna Bor.-Am., ii, 1831, 323.—NUTTALL, Man. Orn. U. S. and Can., i, 1832, 588.—AUDUBON, Orn. Biog., i, 1831, 248, pl. 47; v, 1839, 544; Synop., 1839, 170; Birds Am., iv, 1842, 190, pl. 253.—GIRAUD, Birds L. I., 1844, 169.—HURDIS, Jardine's Contr. Orn., 1850, 37 (Bermudas).—REICHENBACH, Aufz. der Colibr., 1854, 12; Troch. Enum., 1855, 10, pl. 826, figs. 4939-44.—CABANIS, Journ. für Orn., 1856, 98 (Cuba).—SCLATER, Proc. Zool. Soc. Lond., 1856, 287 (Córdoba, Vera Cruz); 1859, 367 (Jalapa, Vera Cruz), 386 (Oaxaca); 1864, 176 (City of Mexico); Cat. Am. Birds, 1862, 297 (Dueñas, Guatemala).—BAIRD, Rep. Pacific R. R. Surv., ix, 1858, 131; Cat. N. Am. Birds, 1859, no. 101; Rep. U. S. and Mex. Bound. Surv., ii, pt. 2, 1859, 6 (Brownsville, Texas).—GOULD, Mon. Troch., pt. xv, 1858; vol. iii, 1861, pl. 131; Introd. Troch., oct. ed., 1861, 86 (crit.).—MARTENS, Journ. für Orn., 1859, 216 (Bermudas).—SCLATER and SALVIN, Ibis, 1859,



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- [*Trochilus*] *colubris* GUNDLACH, Journ. für Orn., 1861, 334 (Cuba).—GRAY, Hand-list, i, 1869, 136, no. 1744.—COUES, Key N. Am. Birds, 1872, 184.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 84.—CORY, List Birds West Ind., 1885, 18.—SHARPE, Hand-list, ii, 1900, 140.
- Trochilus colubris* DE OCA, Troq. de Mex., 1875, pl. (2), fig. 5.
- Ornismya colubris* LESSON, Hist. Nat. Ois.-Mouch., 1829, pp. xvi, 151, pls. 48, 48 bis; Les Trochil., 1831, i, pl. 1; Index Gen. and Synop. Troch., 1832, p. xxxiv.—DEVILLE, Rev. et Mag. de Zool., 1852 (habits).—MULSANT and VERREAUX, Classif. Troch., 1866, 91; Hist. Nat. Ois.-Mouch., iv, livr. 1, 1877, 52.

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- Mellisuga colubris* WOODHOUSE, in Rep. Sitgreaves' Expl. Zuni and Col. R., 1853, 65 (Indian Territory; Texas).
- M[ellisuga]* *colubris* GRAY and MITCHELL, Gen. Birds, i, Dec., 1848, 113.
- Melisuga colubris* BREWER, Proc. Bost. Soc. N. H., vii, 1860, 306 (Cuba).
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- Orthorhynchus colubris* D'ORBIGNY, in La Sagra's Hist. Nat. Cuba, Ois., 1840, 126.
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- Trochilus auricularis*<sup>a</sup> LAWRENCE, Ann. Lyc. Nat. Hist. N. Y., vii, 1862, 458 (locality unknown; coll. U. S. Nat. Mus.; =discolored alcoholic specimen).
- [*Trochilus*] *aureicularis* GRAY, Hand-list, i, 1869, 136, no. 1746.
- T[rochilus]* *aureicularis* HEINE, Journ. für Orn., 1863, 208.

### ARCHILOCHUS ALEXANDRI (Bourcier and Mulsant).

#### BLACK-CHINNED HUMMING BIRD.

*Adult male*.—Above rather dull metallic bronze-green, darker and duller on pileum, the forehead sometimes dull dusky; remiges dark brownish slate or dusky, faintly glossed with purplish; tail (except middle pair of rectrices) bronzy purplish black; loreal, suborbital, auricular, and malar regions, chin, upper throat, and sides of throat uniform opaque or velvety black; lower throat metallic violet or violet-purple, changing to black in position *b*; chest dull grayish white or very pale brownish gray, the under parts of body similar, but usually more decidedly grayish medially, the sides and flanks darker and glossed or overlaid with metallic bronze or bronze-green; under tail-coverts brownish gray (sometimes glossed with bronzy) centrally or medially, broadly margined with white; femoral tufts and tuft on each side of rump white; bill dull black; iris dark brown; feet dusky; length (skins), 80–88 (86); wing, 41.5–44 (42.7); tail, 23.5–28 (25.6); middle rectrices, 20.5–23.5 (21.9); exposed culmen, 18–20.5 (19.2).<sup>b</sup>

*Adult female*.—Above rather dull metallic bronze-green, the pileum much duller, usually dull grayish brown or brownish gray, at least on forehead and crown; remiges dark brownish slate or dusky, faintly glossed with purplish; three outer rectrices (on each side) broadly tipped with white, the subterminal portion (extensively) black, the basal half (more or less) metallic bronze-green (sometimes grayish basally); under parts dull white or grayish white (more purely white on abdomen and under tail-coverts), the throat sometimes streaked or guttately spotted with dusky; femoral tufts and tuft on each side

<sup>a</sup> Wrongly cited as "*Trochilus aureigaster (aureigula?)*" in Hist. N. Am. Birds, ii, 1874, 448, in text, and as "*Trochilus aureigaster* Lawrence, Ann. Lyc. N. Y., vii, p. 58" by Salvin in Cat. Birds Brit. Mus.

<sup>b</sup> Ten specimens.



of rump white; bill, etc., as in adult male; length (skins), 86-102 (91); wing, 46-48.5 (47); tail, 26-27.5 (26.8); middle rectrices, 24-26 (24.8); exposed culmen, 19.5-22 (20.6).<sup>a</sup>

*Young male*.—Similar to the adult female, but feathers of upper parts margined terminally with pale grayish buffy, under parts more or less strongly tinged or suffused with pale buffy brownish, and throat always (?) streaked or spotted with dusky.

*Young female*.—Similar to the young male, but throat usually immaculate or with the dusky spots or streaks smaller and less distinct.

Western United States and southern British Columbia (both sides of Cascade range; Chilliwack); east to southern Alberta (?), western Montana (Columbia Falls), western Colorado (La Plata Co.), and western and middle Texas (Gillespie, Concho, Tom Green, San Saba, Bexar, Mason, and Refugio counties); breeding, locally (in Transition and Upper Sonoran zones), throughout its general range (except in Pacific coast district from middle California northward?), south to southern California (San Diego, San Bernardino, and Riverside counties), northern Lower California (Hardy River; Rancho San Antonio), Arizona (Santa Rita, Santa Catalina, and Huachuca mountains, Tucson, Camp Lowell, Oracle, etc.), southern New Mexico (Grant and Otero counties), Nuevo León (Montemorelos; Monteréy; Sierra Madre), Tamaulipas (Jaumave), Chihuahua (San Diego), and Sonora (Guaymas); in winter farther southward, in States of Durango (Rio Setín, April), Zacatecas (Xeres, September), Sinaloa (Culiacán), Jalisco (Ocotlán, January; Plains of Colima, January), Michoacán (Querendero, August; La Salada, March), Guerrero (Venta de Zopilote, October), and Mexico (City of Mexico).

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*Trochilus alexandri* HEERMANN, Journ. Ac. Nat. Sci. Phila., 2d ser., ii, 1852, 269 (near Guaymas, Sonora, breeding; Sacramento, California, breeding); Rep. Pacific R. R. Surv., x, pt. iv, no. 2, 1859, 56 (Guaymas; Sacramento, Dry Creek, and Cosumnes R., California).—CASSIN, Illustr. Birds Cal., Tex., etc., 1854, 141, pl. 22.—GOULD, Mon. Troch., pt. xiv, 1857, pl. 4; vol. iii, 1861, pl. 132; Introd. Troch., oct. ed., 1861, 87.—BAIRD, Rep. Pacific R. R. Surv., ix, 1858, 133; ed. 1860 ("Birds N. Am."), 133, pl. 14, fig. 3; Cat. N. Am. Birds, 1859, no. 102; Rep. U. S. and Mex. Bound. Surv., ii, pt. 2, 1859, 6, pl. 5, fig. 3.—XANTUS, Proc. Ac. Nat. Sci. Phila., 1859, 190 (Ft. Tejon, California).—SCLATER, Cat. Am. Birds, 1862, 297 (n. Mexico); Proc. Zool. Soc. Lond., 1864, 177 (City of Mexico).—COUES, Proc. Ac. Nat. Sci. Phila., 1866, 56 (Colorado Desert); 1868, 82 (Tucson, Arizona); Check-list, 1873, no. 276; 2d ed., 1882, no. 410.—COOPER, Orn. Cal., 1870, 353; Proc. Cal. Ac. Sci., 1876,

90 (Haywards, Alameda Co.).—MERRIAM, Sixth An. Rep. U. S. Geol. Surv., 1872, 693, 714 (Ogden, Utah).—RIDGWAY, Bull. Essex Inst., v, 1873, 173 (Wahsatch Mts., Utah), 185 (Colorado); vi, 1874, 171 (Sacramento); vii, 1875, 10, 15, 17 (Truckee Valley, Nevada), 21 (East Humboldt Mts., Nevada), 30 (Salt Lake Valley), 33 (Parleys Park, Utah); Orn. 40th Parallel, 1877, 559; Proc. U. S. Nat. Mus., iii, 1880, 187, 314; Nom. N. Am. Birds, 1881, no. 336; Rep. U. S. Nat. Mus. for 1890 (1891), 331 (monogr.; habits).—BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 450, pl. 47, fig. 1.—YARROW and HENSHAW, Rep. Orn. Spec. Wheeler's Surv., 1871-73 (1874), 23, 47 (Provo, Utah).—HENSHAW, Rep. Orn. Spec. Wheeler's Surv., 1873 (1874), 130, 162 (Apache and Camp Grant, Arizona); 1876, 256 (Tejon Mts., California); 1879, 312 (Honey Lake and Camp Bidwell, n. California); Ann. Lyc. N. Y., xi, 1874, (8) (Utah); Zool. Expl. W. 100th Merid., 1875, 373 (localities in Utah and Arizona).—VILLADA, La Naturaleza, ii, 1874, 351 (Valley of Mexico).—DE OCA, La Naturaleza, iii, 1875, 102 (Valley of Mexico); Troq. de Mex., 1875, 32, pl. (6), fig. 22.—ELLIOT, Classif. and Synop. Troch., 1879, 106.—BELDING, Proc. U. S. Nat. Mus., i, 1879, 390, 391, 393, 426, 496 (Marysville, Murphys, and Calaveras Big Trees, California).—PURDIE, Bull. Nutt. Orn. Club, iv, 1879, 60 (Gillespie, Bosque, and San Saba counties, Texas).—BREWSTER, Bull. Nutt. Orn. Club, vii, 1882, 210 (Tucsón, Santa Rita Mts., and Camp Lowell, Arizona, breeding; descr. nest and eggs).—BROWN (N. C.), Auk, i, 1884, 123 (Kendall Co., Texas).—GAULT, Auk, ii, 1885, 310 (San Bernardino Co., California, breeding).—EVERMANN, Auk, iii, 1886, 180 (Ventura Co., California, breeding).—SCOTT, Auk, iii, 1886, 430 (Santa Catalina Mts. and Ft. Lowell, Arizona, breeding).—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886, no. 429.—LLOYD, Auk, iv, 1887, 192 (Concho and Tom Green counties, w. Texas, breeding).—TOWNSEND, Proc. U. S. Nat. Mus., x, 1887, 207 (lower McCloud R., etc., n. California; habits; descr. nest).—BECKHAM, Proc. U. S. Nat. Mus., x, 1887, 666 (Bexar Co., Texas, March, common).—MORCOM, Bull. Ridgw. Orn. Club, no. 2, 1887, 42 (San Bernardino, California, breeding).—EMERSON, Bull. Cal. Ac. Sci., ii, 1887, 427 (Poway Valley, San Diego Co., California, breeding).—COOKE, Bird Migr. Miss. Val., 1888, 141 (Mason, Concho, Tom Green, Kendall, Gillespie, Bexar, and San Saba counties, Texas); Bull. Col. Agr. Coll., no. 37, 1897, 86 (w. and s. w. Colorado below 6,000 ft.).—BRYANT (W. E.), Proc. Cal. Ac. Sci., ser. 2, 1889, 289 (n. w. coast Lower California).—MEARNS, Auk, vii, 1890, 225 (San Francisco Mt., Arizona, breeding in pine belt).—FANNIN, Check List Birds Brit. Col., 1891, 30 (both sides of Cascade range).—RHODES, Proc. Ac. Nat. Sci. Phila., 1892, 117 (Santa Catalina Mts., Tucsón, and Oracle, Arizona, breeding).—ATTWATER, Auk, ix, 1892, 235 (San Antonio, Texas, common summer res.).—ANTHONY, Auk, ix, 1892, 363 (Apache Hills, s. w. New Mexico; breeding?).—SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 402 (Montemorelos, Monteréy, and Sierra Madre, Nuevo León; Nuri, Sonora; Xeres, Zacatecas; Plains of Colima; Vente de Zopilote, Guerrero; Valley of Mexico).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 359 (San Diego, Chihuahua, etc.).—BOUCARD, Gen. Hum. Birds, 1895, 3.—FISHER (A. K.), North Am. Fauna, no. 7, 1893, 56 (Owens Valley, Walker Basin, etc., s. e. California, breeding; Beaver Dam Creek, Arizona, and Santa Clara Valley, Utah, breeding).—HARTERT (E. and C.), Novit. Zool., i, 1894, 22 (California; descr. nest and eggs).—BENDIRE, Life Hist. N. Am. Birds, ii, 1895, 198.—MERRIAM (Florence A.), Auk, xiii, 1896, 118 (San Diego Co., California, breeding; habits; descr. nest and eggs).—DAWSON, Auk, xiv, 1897, 175 (Okanogan Co., Washington).—MERRILL (J. C.), Auk, xiv, 1897, 355 (Ft. Sherman, n. Idaho, breeding).—MITCHELL, Auk, xv, 1898, 308 (San Miguel

- Co., New Mexico, breeding up to 8,000 ft.).—GRINNELL (J.), Pub. 2, Pasadena Ac. Sci., 1898, 27 (Los Angeles Co., California, sum. resid.); Condor, vi, 1904, 42 (Palm Springs, Riverside Co., California, Dec.); Univ. Calif. Pub. Zool., v, 1908, 70 (San Bernardino Mts., breeding on foothills).—LANTZ, Trans. Kansas Ac. Sci. for 1896-97 (1899), 221 (Culiacán, Sinaloa).—SNYDER, Auk, xvii, 1900, 244 (Blue Lake, Idaho, July).—CARROLL, Auk, xvii, 1900, 344 (Refugio Co., Texas, transient).—BAILEY (Florence M.), Handb. Birds W. U. S., 1902, 235.—STONE and REHN, Proc. Ac. Nat. Sci. Phila., 1903, 27 (Dry Cañon, Otero Co., New Mexico, breeding).—SWARTH, Pacific Coast Avifauna, no. 4, 1904, 17 (Huachuca Mts., Arizona, up to 7,000 ft.).—JOHNSON, Condor, viii, 1906, 28 (Cheney, e. Washington, breeding).—MILLER (W. De W.), Bull. Am. Mus. N. H., xxii, 1906, 167 (Rio Setín, n. w. Durango, April).—SHARP, Condor, ix, 1907, 88 (San Diego Co., California, breeding).—KERMODE, Prov. Mus., 1909, 51 (Chilliwack, Brit. Columbia).  
 [*Trochilus alexandri* BONAPARTE, Rev. et Mag. de Zool., 1854, 256.—COUES, Key N. Am. Birds, 1872, 184.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 84.—SHARPE, Hand-list, ii, 1900, 140.  
*M[ellisuga] alexandri* GRAY, Gen. Birds, i, Dec., 1848, 113.  
*[Selasphorus] β. Archilochus alexandri* REICHENBACH, Aufz. der Colibr., 1854, 13.  
*[Selasphorus] alexandri* REICHENBACH, Troch. Enum., 1855, 10, pl. 855, figs. 5030-5032.  
*Ornismya alexandri* MULSANT and VERREAUX, Classif. Troch., 1866, 91; Hist. Nat. Ois.-Mouch., iv, livr. 1, 1877, 61.—BOUCARD, Notes Troch. du Mex., 1875, 4 (coast of Chiapas).  
*[Ornismya] alexandri* MULSANT, Ann. Soc. Linn. Lyon, n. s., xxii, 1876, 227.  
*[Trochilus] alexandrei* SIMON, Cat. Troch., 1897, 38.  
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### ARCHILOCHUS VIOLAJUGULUM <sup>a</sup> (Jeffries).

#### VIOLET-THROATED HUMMING BIRD.

*Adult male.*<sup>b</sup>—Pileum dull dusky green—almost black when viewed from in front, more metallic from behind; rest of upper parts, except remiges and rectrices (but including middle pair of the latter), bronzy green; remiges and primary coverts dull purplish dusky; tail (except middle pair of rectrices) dull black, the feathers tinged at tips with metallic green; a small white spot behind eye; chin and a rather indistinct stripe thence backward beneath eye and along upper margin of gorget opaque dull black; gorget metallic auricula purple (much less violaceous than in *A. alexandri*), the posterior and lateral feathers not elongated; chest dull grayish white; rest of under parts dull light bronzy green, nearly uniform on sides and flanks, elsewhere broken by whitish margins to the feathers, these particularly distinct on the lower tail-coverts and along middle line of the belly; bill black, feet dusky; length (skin), 86; wing, 47; tail, 33; middle

<sup>a</sup> Probably a hybrid of *Archilochus alexandri* and *Calypste anna*.

<sup>b</sup> Description from type, no. 1616, coll. Dr. J. Amory Jeffries, (now in coll. Mus. Comp. Zool.).



pair of rectrices 6.3 shorter, the lateral one only 3.8 wide in middle portion.<sup>a</sup>

*Trochilus violajugulum* JEFFRIES, Auk, v, no. 2, April, 1888, 168 (Santa Barbara, California; coll. J. Amory Jeffries); vi, 1889, 223.—CHAPMAN, Auk, v, 1888, 396.—AMERICAN ORNITHOLOGISTS' UNION, Suppl. Check List, 1888, 10, no. 429.1; Auk, v, 1888, 396; Abridged Check List, 1889, no. 429.1; Check List, 2d ed., 1895, no. 429.1.—RIDGWAY, Rep. U. S. Nat. Mus. for 1890 (1891), 329, pl. 38, fig. 2 (monogr.); Man. N. Am. Birds, 2d ed., 1896, 598.—BOUCARD, Gen. Hum. Birds, ii, 1892, 3.—BENDIRE, Life Hist. N. Am. Birds, ii, 1895, 201.

*T[rochilus] violajugulum* HARTERT, Das Tierreich, Troch., 1900, 202.

[*Trochilus*] *violijugulum* SHARPE, Hand-list, ii, 1900, 140.

#### Genus TILMATURA Reichenbach.

*Tryphæna* <sup>b</sup> (not of Ochsenheimer, 1816) GOULD, Mon. Troch., pt. i, June, 1849; Introd. Troch., oct. ed., 1861, 96. (Type, *Ornismya dupontii* Lesson.)

*Tilmatura* REICHENBACH, Aufz. der Colibr.,<sup>c</sup> 1854, 8; Troch. Enum., 1855, 5. (Type, *T. lepida* Reichenbach=*Ornismya dupontii* Lesson.)

Small Trochilidæ (length, including long tail of adult male, about 58–100 mm.), resembling *Nesophlox*, but with bill shorter than head, a conspicuous white or buffy patch on each side of rump, the adult male with lateral pair of rectrices abruptly contracted near tip, and three outer rectrices tipped and banded with white.

Bill (unfeathered portion) shorter than head, straight, slender, terete; culmen rounded, scarcely contracted basally; tomia smooth; mandible with the usual lateral median groove. Nasal operculum broad and convex, nude, but covered by decumbent frontal feathering, which extends anteriorly to about anterior end of nostril, forming a very short obtuse point or antia on each side of culmen. Tarsus naked on inner and posterior sides, feathered on anterior and outer sides; outer toe apparently about as long as middle toe, the inner slightly shorter; hallux about as long as inner toe or slightly shorter. Wing about three times as long as exposed culmen, the outermost primary longest. Tail of adult male nearly one and a half times as long as wing, forked for about three-fourths its length, the outer pair of rectrices abruptly contracted terminally, but with rounded, slightly expanded tip; in adult female about half as long as wing, deeply emarginate, but with outermost rectrix shorter than the next.

*Coloration*.—Above rather dark metallic bronze-green, including middle rectrices; a conspicuous spot of white or buff on each side of rump. Adult male with chin and throat black, the feathers tipped with dark violet-blue, chest white, the longer rectrices tipped and at

<sup>a</sup> The tip of the bill having been shot away, the length of the culmen can not be given; the length of the bill from the base of the culmen to the tip of the mandible, however, is 17.2 mm.

<sup>b</sup> *Τρυφαίνα*, nom. prop. (Gould.)

<sup>c</sup> A nomen nudum in "Aufz. der Colibr."

wide intervals banded with white; adult female with under parts light cinnamon-rufous, the lateral rectrices black tipped with whitish.

*Range*.—Southern Mexico to Guatemala. (Monotypic.)

**TILMATURA DUPONTII (Lesson).**

**DUPONT'S HUMMING BIRD.**

*Adult male*.—Above metallic bronze or bronze-green; remiges dull brownish slate or dusky, faintly glossed with purplish; middle pair of rectrices metallic bronze-green the next pair with outer web (in part at least) bronze-green, the inner web purplish black; remaining rectrices mostly purplish black, broadly tipped with white, the two outer ones (on each side) crossed, about one-third the distance from tip, by a white band, this preceded by a band of chestnut or chestnut-rufous, the third (from outside) with a white spot on middle portion of inner web; a conspicuous white patch on each side of rump; chin and throat black, the feathers tipped or terminally margined with metallic violet-blue, their basal portion dusky grayish; chest grayish white; rest of under parts dark metallic bronze-green, the feathers sometimes margined terminally with pale grayish; femoral tufts white; bill dull black; iris dark brown; feet dusky; length (skins), 82–101 (90); wing, 33–35 (34); tail, 38–47 (43); middle rectrices, 9–12 (10.5); exposed culmen, 12.5–13.5 (12.9).<sup>a</sup>

*Adult female*.—Above metallic bronze or bronze-green, duller on pileum, especially the forehead; middle pair of rectrices metallic bronze-green, blackish terminally or subterminally; remaining rectrices metallic bronze-green basally, purplish or bronzy black subterminally (broadly) and tipped with light cinnamon-rufous (sometimes passing into white proximately); a conspicuous patch of pale cinnamon-buff or buffy white on each side of rump; remiges as in adult male; under parts buffy cinnamon or cinnamon-rufous, deepest laterally and posteriorly; bill, etc., as in adult male; length (skins), 58–67 (63); wing, 33.5–36 (34.7); tail, 16.5–18, middle rectrices, 13.5–16 (14.5); exposed culmen, 12–14.5 (13.6).<sup>b</sup>

Southern Mexico, in States of Vera Cruz (Córdova; Orizaba; Jalapa; Los Cerrillos, near Jalapa; Coátepec; Cuesta de Misantla), Mexico (Valley of Mexico), Jalisco (Volcán de Colima<sup>c</sup>), and Guerrero<sup>c</sup> (Amula; Chilpancingo), and highlands of Guatemala (Guatemala City; Volcán de Santa Maria, Quezaltenango; Cobán, Vera Paz; San Gerónimo); northern Nicaragua<sup>c</sup> (Matagalpa).

*Ornismya dupontii* LESSON, Hist. Nat. Colibr., Suppl. Ois.-Mouch., 1830–31, 100, pl. 1 (Mexico); Index Gen. et Synop. Troch., 1832, p. xxiv.—D'Oca, La Naturaleza, iii, 1875, 103 (Jalapa, Vera Cruz; Valley of Mexico).

<sup>a</sup> Ten specimens.

<sup>b</sup> Eight specimens.

<sup>c</sup> I have not seen specimens from Jalisco, Guerrero, nor Nicaragua.

- Ornismya duponti* DE OCA, Los Colibris, Mex., 1875, 33.  
*Trochilus duponti* JARDINE, Nat. Libr., Humming-birds, i, 1833, 131, pl. 26.  
*M[ellisuga] duponti* GRAY, Gen. Birds, i, Dec., 1848, 113.  
*[Trochilus] duponti* GRAY, Hand-list, i, 1869, 146, no. 1883.  
*Tryphæna dupontii* GOULD, Mon. Troch., pt. i, June, 1849; vol. iii, 1861, pl. 158; Introd. Troch., oct. ed., 1861, 97.—SCLATER and SALVIN, Ibis, 1859, 129 (Guatemala).—SALVIN, Ibis, 1860, 266 (San Gerónimo, Guatemala).—MULSANT and VERREAUX, Classif. Troch., 1866, 79.  
*Triphaena duponti* HERRERA, La Naturaleza (2), i, 1891, 322 (Valley of Mexico).  
*Tryphaena dupontii* VILLADA, La Naturaleza, ii, 1874, 360 (Valley of Mexico).  
*Triphaena duponti* DE OCA, Troq. de Mex., 1875, pl. (7), fig. 23.  
*[Tryphaena] duponti* BONAPARTE, Consp. Av., i, 1850, 84.  
*[Thaumastura] duponti* BONAPARTE, Rev. et Mag. de Zool., 1854, 257.  
*Thaumastura duponti* SCLATER, Proc. Zool. Soc. Lond., 1856, 288 (Córdova, Vera Cruz).  
*T[ilmatura] duponti* CABANIS and HEINE, Mus. Hein., iii, 1860, 59, footnote (Mexico; Guatemala).—HEINE, Journ. für Orn., 1863, 205.—HARTERT, Das Tierreich, Troch., 1900, 200 (monogr.).  
*Tilmatura duponti* SCLATER, Cat. Am. Birds, 1862, 300 (Guatemala).—MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., iv, livr. 1, 1877, 11, pl. 101 (Mexico; Guatemala).—BOUCARD, Notes Troch. du Mex., 1875, 10 (Córdova and Jalapa, Vera Cruz; Oaxaca; Guatemala); Liste Ois. réc. Guat., 1878, 46; Gen. Hum. Birds, 1895, 20.—ELLIOT, Classif. and Synop. Troch., 1879, 128.—FERRARI-PEREZ, Proc. U. S. Nat. Mus., ix, 1886, 157 (Jalapa).—RIDGWAY, Rep. U. S. Nat. Mus. for 1890 (1891), pl. 12 (nest).—SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 385, 667 (Volcán de Colima; Amula and Chilpancingo, Guerrero; Jalapa, etc., Vera Cruz; Volcán de Santa Maria, Cobán, San Gerónimo, and Vera Paz, Guatemala); Ibis, 1892, 327 (Matagalpa, Nicaragua).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 348.—HARTERT (E. and C.), Novit. Zool., i, 1894, 21, 63 (Chilpancingo, Guerrero).  
*[Tilmatura] duponti* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 85.—MULSANT, Cat. Ois.-Mouch., 1875, 28; Ann. Soc. Linn. Lyon, n. s., xxii, 1876, 225.—SHARPE, Hand-list, ii, 1900, 140.  
*Ornismya coelestis* LESSON, Traité d'Orn., 1831, 276 (Mexico).  
*Ornismya zémès* LESSON, Rev. Zool., 1838, 315 (Mexico).  
*Tilmatura lepida* REICHENBACH, Aufz. der Colibr., 1854, 8; Troch. Enum., 1855, 5, p. 711, figs. 4610-4614.

#### Genus NESOPHLOX Ridgway.

- Nesophlox a* RIDGWAY, Proc. Biol. Soc. Wash., xxiii, April 19, 1910, 55. (Type, *Trochilus evelynæ* Bourcier.)  
*Egolia* (not of Erichson, 1842) MULSANT and VERREAUX, Mém. Soc. Imp. Sci. Nat. de Cherbourg, xii, (sér. 2, tome ii), 1866, 230, in text (Classif. Troch., 1866, 86). (Type, *Trochilus evelynæ* Bourcier.)

Small Trochilidæ (length about 75-90 mm.) resembling *Doricha*, but differing in relatively much shorter and nearly to quite straight bill (exposed culmen less than half as long as wing), and tail of adult male shorter than wing.

Bill about as long as head or slightly longer, straight or at most very faintly decurved, terete; culmen rounded except basally, where



more contracted, sometimes forming a rather distinct narrow ridge; tomia smooth; mandible with the usual longitudinal median sulcus. Nasal operculum rather broad and convex, more or less (sometimes wholly) hidden by the decumbent frontal feathering, which extends forward to beyond anterior end of nostril, forming a short and obtuse point or antia on each side of culmen. Tarsus feathered for upper portion except behind; inner toe about as long as middle toe, the outer very slightly shorter, the hallux shorter than outer toe. Wing more than twice as long as exposed culmen, the outermost primary longest, rather narrow, but not attenuated nor acuminate. Tail in adult male shorter than wing, forked for more than half its length, the lateral rectrices rather narrow but rounded at tip; in adult females at least half as long as wing, strongly double rounded or rounded with middle pair of rectrices abruptly shorter than the rest.

*Coloration.*—Above rather dull or dark metallic bronze or bronze-green, including middle rectrices; under parts of body more or less rufescent, sometimes glossed with green or bronze laterally, the chest whitish or buffy. Adult male with chin and throat bright metallic reddish purple sometimes passing into violet or blue posteriorly, the lateral rectrices purplish black broadly edged on inner web with cinnamon-rufous; adult females with chin and throat dull white or cinnamon-buffy, lateral rectrices rufescent with a subterminal band of black.

*Range.*—Bahama Islands; Costa Rica and western Panamá. (Three species.)

While acknowledging the very close relationship of this group to *Calliphlox* Boie, I believe it is better to keep it apart, the type of *Calliphlox* having the lateral rectrices contracted and obtusely pointed terminally, the middle rectrices much broader, and the primaries very much narrower, the outer one very narrow terminally. The coloration is very similar, but in *Calliphlox* there is no rufous on the tail, which (except the middle rectrices) is uniform purplish black. *N. bryantæ* is intermediate in coloration between the typical species of the present genus and *Calliphlox*, the female agreeing with that of the latter in the conspicuous dusky auricular area, while both sexes agree with the species of *Nesophlox* in coloration of the tail. It is also, to a certain extent, intermediate in form, but seems nearer the present group.

#### KEY TO THE SPECIES OF NESOPHLOX.

- a. Throat bright metallic reddish purple; tail deeply forked, the longer rectrices edged on inner web with cinnamon-rufous but not tipped with that color. (*Adult males.*)
- b. Bill slightly decurved from middle portion; under parts of body more rufescent; purple of throat passing into violet on posterior border; a conspicuous lumbar tuft of white.

- c. Forehead dusky or dark metallic greenish, like crown; lateral rectrices straight, broader. (Bahamas, except island of Inagua.)

*Nesophlox evelynæ*, adult male (p. 641).

- cc. Forehead metallic reddish purple, like throat; lateral rectrices doubly curved, narrower. (Island of Inagua, Bahamas.)

*Nesophlox lyrura*, adult male (p. 644).

- bb. Bill straight; under parts of body more greenish; purple of throat not passing into violet posteriorly. (Costa Rica and western Panamá.)

*Nesophlox bryantæ*, adult male (p. 645).

- aa. Throat pale gray, pale rufous-buff, or whitish; tail double-rounded, the longer rectrices tipped with light cinnamon-rufous. (*Adult females*.)

- b. No distinct auricular patch of dusky; no white lumbar tuft; throat pale grayish; axillars and under wing-coverts cinnamon-rufous; tail more than 26.

- c. Slightly larger; wing, 41.5–45.5 (43.3); tail, 26.5–30.5 (28.5), middle rectrices, 23–28.5 (25.5); exposed culmen, 15.5–18 (16.6).<sup>a</sup>

*Nesophlox evelynæ*, adult female (p. 642).

- cc. Slightly smaller; wing, 40.5–43 (41.9); tail, 27.5–29.5 (28.5), middle rectrices, 23.5–26 (25); exposed culmen, 16–17 (16.6).<sup>a</sup>

*Nesophlox lyrura*, adult female (p. 644).

- bb. A distinct auricular patch of dusky and a conspicuous lumbar tuft of white; axillars and under wing-coverts olive-bronzy; tail less than 25.

*Nesophlox bryantæ*, adult female (p. 645).

#### NESOPHLOX EVELYNÆ (Bourcier).

##### BAHAMA WOOD-STAR.

*Adult male*.—Above rather dull metallic green or bronze-green, including middle pair of rectrices; remiges dark brownish slate or dusky, very faintly glossed with purplish; tail (except middle pair of rectrices) purplish black, the second and third rectrices with inner web cinnamon-rufous (except for a narrow space along shaft toward tip), the third (from outside) with basal portion of outer web (extensively) also cinnamon-rufous, the fourth with outer web (sometimes basal portion of inner web also) mostly cinnamon-rufous;<sup>b</sup> a small postocular spot (sometimes a rictal spot also) of dull white; chin and throat brilliant metallic solferino purple passing into violet or violet-blue posteriorly and laterally, the chin and anterior portion of throat decidedly reddish purple or purplish red; chest white, passing into light buffy grayish posteriorly; rest of under parts cinnamon-rufous, paler medially, the sides and flanks glossed with metallic bronze or bronze-green; under tail-coverts cinnamon-rufous medially, passing into cinnamon-buff or white laterally; femoral tufts white; bill dull black; iris dark brown; feet grayish brown (in dried skins); length

<sup>a</sup> I am not able to discover any positive characters distinguishing females of these two species.

<sup>b</sup> Sometimes the fourth rectrix passes into metallic bronze-green terminally, at least on edge.

(skins), 79-93 (87); wing, 37-40.5 (38.9); tail, 31-34 (32.2), middle rectrices, 13.5-17 (15.2); exposed culmen, 15.5-16.5 (15.9).<sup>a</sup>

*Adult female*.—Above as in the adult male, but slightly duller metallic bronze-green, especially on pileum, where sometimes dull grayish brown, at least on forehead; three outer rectrices (on each side) extensively light cinnamon-rufous basally, broadly tipped with pale cinnamon-rufous or vinaceous-rufous, and crossed by a very broad subterminal band of purplish black, the latter separated from the rufescent basal portion on outer web by more or less of metallic green; third rectrix (from outside) mostly metallic bronze-green, extensively black terminally, the concealed basal portion light cinnamon-rufous; chin and throat dull grayish white, sometimes tinged with pale cinnamon or cinnamon-buff; chest grayish white; rest of under parts cinnamon-rufous, paler medially, the under tail-coverts paler cinnamon-rufous or cinnamon-buff, sometimes indistinctly whitish along edges; femoral tufts white; bill, etc., as in adult male; length (skins), 76-89 (85); wing, 41.5-45.5 (43.3); tail, 26.5-30.5 (28.5), middle rectrices, 23-28.5 (25.5); exposed culmen, 15.5-18 (16.6).<sup>b</sup>

*Young male*.—Similar to the adult female, but lateral rectrices relatively longer and narrower and with the black relatively more extended; in older individuals the throat with a greater or less number of metallic reddish purple feathers.

*Young female*.—Similar to the adult female, but feathers of upper parts (especially rump) indistinctly margined with rusty.

<sup>a</sup> Seventeen specimens.

<sup>b</sup> Nineteen specimens.

| Locality.                                             | Wing. | Lateral<br>rec-<br>trices. | Middle<br>rec-<br>trices. | Ex-<br>posed<br>culmen. |
|-------------------------------------------------------|-------|----------------------------|---------------------------|-------------------------|
| MALES.                                                |       |                            |                           |                         |
| Seven adult males from New Providence Island.....     | 38.4  | 32.2                       | 14.9                      | 16.2                    |
| One adult male from Eleuthera.....                    | 40.5  | 32.5                       | 17                        | 16.5                    |
| One adult male from Green Cay.....                    | 38.5  | 31.5                       | 17                        | .....                   |
| One adult male from Andros Island (Mangrove Cay)..... | 39    | 32                         | 14                        | .....                   |
| Two adult males from Abaco.....                       | 38.7  | 31.5                       | 15                        | 15.7                    |
| Two adult males from Rum Cay.....                     | 39.5  | 34                         | 16                        | 16                      |
| One adult male from Watlings Island.....              | 39.5  | 32                         | 15.5                      | 15.5                    |
| Two adult males from Great Bahama.....                | 39.5  | 31.7                       | 14.2                      | 15.5                    |
| FEMALES.                                              |       |                            |                           |                         |
| Six adult females from New Providence.....            | 42.8  | 28.9                       | 25.2                      | 17                      |
| Two adult females from Eleuthera.....                 | 43    | 29                         | 25.7                      | 17                      |
| Five adult females from Abaco.....                    | 42.7  | 27.4                       | 24.7                      | 16.2                    |
| Three adult females from Rum Cay.....                 | 43.2  | 29.5                       | 26.8                      | 16.2                    |
| One adult female from Concepcion.....                 | 43.5  | 29.5                       | 27.5                      | 16.5                    |
| Two adult females from Andros (Mangrove Cay).....     | 43.5  | 27.5                       | 25.2                      | 16.7                    |



Bahama Islands (New Providence; Biminis; Berry Islands; Eleúthera; Andros; San Salvadór; Concepción; Watling; Acklin; Crooked Island; Long Island; Current Island; Grand Caicos; North Caicos; East Caicos; Cay Sal; Green Cay; Mangrove Cay; Elbow Cay; Stranger Cay; Moraine Cay; Rum Cay; Cay Lobos; Great Bahama).

*Troch[ilus] evelynæ* BOURCIER, Proc. Zool. Soc. Lond., 1847, 44 (Nassau, New Providence I., Bahamas; coll. M. Loddiges).

*C[alothorax] evelynæ* GRAY, Gen. Birds, i, Dec., 1848, 110.

*[Calothorax] evelynæ* GRAY, Hand-list, i, 1869, 135, no. 1733.

*[Lucifer. δ. Calothorax] evelynæ* REICHENBACH, Aufz. der Colibr., 1854, 13.

*[Lucifer] evelynæ* REICHENBACH, Troch. Enum., 1855, 10.

*[Callothorax] evillinae* BONAPARTE, Rev. et Mag. de Zool., 1854, 257.

*Thaumastura evelynæ* GOULD, Mon. Troch., pt. xxi, May, 1856; vol. iii, 1861, pl. 156.

*Doricha evelynæ* GOULD, Introd. Troch., oct. ed., 1861, 95.—ELLIOT, Ibis, 1872, 353 (New Providence; synonymy; crit.); Classif. and Synop. Troch., 1879, 125.—MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., iv, livr. 1, 1877, "83"—38; Suppl., pl. 46, fig. 3.—CORY, Birds Bahama Is., 1880, 108; Auk, iii, 1886, 355; viii, 1891, 294 (New Providence), 295 (Berry Is.), 296 (Biminis), 297 (Caicos Is.), 298 (Abaco), 350 (Abaco), 351 (Eleúthera); Birds West Ind., 1889, 150; Cat. West Ind. Birds, 1892, 13, 107, 127 (Abaco; Biminis; Berry Islands; Eleúthera; New Providence; Andros; San Salvador; Concepción; Watlings; Rum Cay; Long I.; Acklin I.; North Caicos; Grand Caicos; East Caicos; Cay Sal).—NORTHROP, Auk, viii, 1891, 73 (Andros; habits).—RIDGWAY, Auk, viii, 1891, 334 (Abaco), 335 (New Providence), 336, (Eleuthera), 337 (Cat I.; Watlings I.), 338 (Rum Cay), 339 (Green Cay; Concepción I.).—SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 383 (Nassau).—BONHOTE, Ibis, 1899, 514 (New Providence); 1903, 292 (habits); Auk, xx, 1903, 174 (Cay Lobos).—BANGS, Auk, xvii, 1900, 288 (Nassau; Current I.; Eleúthera).—ALLEN (G. M.), Auk, xxii, 1905, 127 Great Bahama; New Providence; Elbow Cay; Stranger Cay).—RILEY, Auk, xxii, 1905, 355 (New Providence; Andros; Eleúthera; Cat I.; Rum Cay; Long I.).

*[Doricha] evelynæ* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 85.—CORY, List Birds West Ind., 1885, 18.

*[Doricha] evelynæ* MULSANT, Ann. Soc. Linn. Lyon, n. s., xxii, 1876, 226.

*Dorycha evelynæ* BOUCARD, Gen. Hum. Birds, ii, 1892, 28 (Long I.).

*Amathusia (Egolia) evelynæ* MULSANT and VERREAUX, Classif. Troch., 1866, 86.

*C[alliphlox] evelynæ* HARTERT, Das Tierreich, Troch., 1900, 198.

*[Calliphlox] evelynæ* SHARPE, Hand-list, ii, 1900, 139.

*[Philodice] evelynæ* SIMON, Cat. Troch., 1897, 38.

*Nesophlox evelynæ* RIDGWAY, Proc. Biol. Soc. Wash., xxiii, April 19, 1910, 55.

*Trochilus bahamensis* BRYANT, Proc. Bost. Soc. N. H., vii, 1859, 106 (Nassau, New Providence I., Bahamas; coll. U. S. Nat. Mus.), 317 (crit.).—ALBRECHT, Journ. für Orn., 1861, 51.

### NESOPHLOX LYRURA (Gould).

#### INAGUA WOOD-STAR.

Similar to *N. evelynæ*, but adult male with forehead metallic reddish purple (instead of dull metallic green), and lateral rectrices longer, relatively narrower, and their terminal portion curved outward; adult female similar to that of *N. evelynæ*, but tail longer, with rela-

tively less of cinnamon-rufous on lateral rectrices, and next to middle pair mostly (sometimes wholly) green.

*Adult male*.—Forehead metallic reddish purple, varying to violet; rest of upper parts, including middle pair of rectrices, rather dull metallic green or bronze green; remiges dull brownish slate or dusky, faintly glossed with purplish; outermost rectrix entirely purplish black, the next with outer web purplish black, inner web cinnamon-rufous; third with most of inner web and basal portion of outer web cinnamon-rufous, the remainder purplish black; fourth purplish black (usually glossed with or passing into dull metallic bronze-green terminally), the outer web edged basally with cinnamon-rufous; a small postocular (sometimes also a rictal) spot of white; chin and throat bright metallic solferino purple, passing into violet or violet-blue posteriorly, the chin and anterior portion of throat more decidedly reddish purple or purplish red; chest grayish white, more decidedly grayish posteriorly; rest of under parts cinnamon-rufous, paler medially, this overlaid, more or less strongly, by metallic bronze or greenish bronze; under tail-coverts light cinnamon-rufous, sometimes partly white especially at base); femoral tufts white; bill dull black; iris dark brown; feet grayish brown or dusky; length (skins), 83–92 (88); wing, 37–38.5 (37.9); tail, 36–40 (38.4); middle rectrices, 12.5–14 (13.2); exposed culmen, 13.5–16 (15.4).<sup>a</sup>

*Adult female*.—Above dull metallic bronze-green or greenish bronze, still duller on pileum, where becoming dull grayish brown or brownish gray on forehead; middle pair of rectrices metallic bronze-green, the next pair similar but with basal portion of outer web (sometimes of both webs) cinnamon-rufous, the terminal portion sometimes blackish; two outer rectrices (on each side) with basal half, or more, light grayish brown, the inner web tinged with light cinnamon-rufous or partly of that color, the tip broadly light grayish brown, brownish gray, or grayish cinnamon, the subterminal portion (broadly) black; third rectrix similar, but with terminal spot smaller and more cinnamonaceous and basal area more decidedly cinnamonaceous; auricular region light brownish gray, fading gradually into dull grayish white, pale buffy grayish, or cinnamon-buff on chin and throat; chest dull grayish white; rest of under parts cinnamon-rufous (more or less deep), paler medially; femoral tufts white; bill, etc., as in adult male; length (skins), 77–78 (77.7); wing, 41–42 (41.4); tail, 27.5–29.5 (28.5); middle rectrices, 23.5–26 (25); exposed culmen, 16–17 (16.6).<sup>b</sup>

*Young male*.—Similar to the adult female, but lateral rectrices longer and relatively narrower, with more black on outer webs and less on inner webs.

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<sup>a</sup> Ten specimens.

<sup>b</sup> Five specimens.

*Immature male (not quite adult).*—Similar to the adult male, but with forehead dull grayish brown or dull bronze-green, instead of metallic purple.

Inagua Island, Bahamas.

*Trochilus evelynæ* (not of Bourcier) BRYANT, Proc. Bost. Soc. N. H., 1866, 65, part (Inagua, Bahamas).

*Doricha lyrura* GOULD, Ann. and Mag. N. H., 4th ser., iv, Aug., 1869, 111, 112 ("Long Id.," i. e., Inagua, Bahamas; coll. J. Gould).—ELLIOT, Ibis, 1872, 354 ("Long Island," error; synonymy; crit.); Classif. and Synop. Troch., 1879, 126.—CORY, Birds Bahama I., 1880, 110; Auk, iii, 1886, 355; viii, 1891, 297, 351 (Inagua); Birds West Ind., 1889, 150; Cat. West Ind. Birds, 1892, 13, 107, 127, 144 (Inagua; Long I.?).—SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 382 ("Long Island").

[*Doricha*] *lyrura* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 85.—MULSANT, Ann. Soc. Linn. Lyon, n. s., xxii, 1876, 226.—CORY, List Birds West Ind., 1885, 18.

*Doriche lyrura* MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., iv, livr. 1, 1877, 41 ("Long Island").

*Dorycha lyrura* BOUCARD, Gen. Hum. Birds, ii, 1892, 28 (Inagua).

[*Calliphlox*] *lyrura* HARTERT, Das Tierreich, Troch., 1900, 199.

[*Calliphlox*] *lyrura* SHARPE, Hand-list, ii, 1900, 139.

[*Philodice*] *lyrura* SIMON, Cat. Troch., 1897, 38.

*Nesophlox lyrura* RIDGWAY, Proc. Biol. Soc. Wash., xxiii, April 19, 1910, 55.

#### NESOPHLOX BRYANTÆ (Lawrence).

##### COSTA RICAN WOOD-STAR.

*Adult male.*—Above dark, rather dull, metallic bronze-green; four middle rectrices duller bronze-green passing into dusky terminally, the remaining rectrices black glossed with purplish bronze, the shafts and broad edging to inner webs pale cinnamon or cinnamon-buff; remiges dull purplish black or purplish dusky; a small whitish or pale cinnamon-buff postocular spot; gorget bright metallic magenta purple; chest dull white, passing posteriorly into deep brownish gray, glossed with metallic bronze or bronze-green except along median line, on lower parts of body; flanks cinnamon-rufous; anal tufts white; tufts on sides of rump pale cinnamon-buff or buffy white; under tail-coverts greenish bronzy margined with pale cinnamon or cinnamon-buff, cinnamon or cinnamon-buff basally; bill dull black; iris dark brown; feet dusky grayish brown; length (skins), 82–94 (89); wing, 40.5–43 (41.6); tail, 32–36.5 (34.6), middle rectrices 12–13.5 (12.8); exposed culmen, 14.5–16.5 (15.6).<sup>a</sup>

*Adult female.*—Above metallic bronze or bronze-green; middle pair of rectrices bronze-green passing into dusky terminally; other rectrices cinnamon-rufous basally, crossed by a broad subterminal band of black and broadly tipped with paler cinnamon-rufous (except next to middle pair); wings as in adult male; lores dull grayish

<sup>a</sup> Ten specimens, from Costa Rica.



cinnamon becoming dusky next to eye; suborbital and auricular regions dusky faintly glossed with bronze or bronze-green, this color extending downward from posterior portion of auricular region toward posterior portion of throat; chin and throat cinnamon-buff passing into cinnamomeous-white on chest, or wholly buffy white; rest of underparts cinnamon-rufous, paler along median line of breast and abdomen, or the cinnamon-rufous confined to sides, flanks and under tail-coverts, the breast (except laterally) and abdomen dull white; sides of breast glossed with bronze-green; anal tufts buffy white; bill, etc., as in adult male; length (skins), 75-85 (79); wing, 40.5-43 (41.9); tail, 21-23.5 (22.5), middle rectrices 15-17 (16.2); exposed culmen, 15.5-17 (16.2).<sup>a</sup>

*Young male*.—Similar to the adult female but tail more deeply forked and with less cinnamon-rufous (except outer rectrices) and (in older individuals) with a greater or less number of metallic purple feathers on throat.

Highlands of Costa Rica (Las Cruces de Candelária; Escazú; San José; San Pedro de San José; San Pedro de Mojón; El Mojón; Volcán de Irazú; Naranjo de Cartago; Cerro Santa Maria; Dota) and western Panamá (Volcán de Chiriquí; Boquete; Boquete de Chitra; Cordillera del Chucu; Castillo; Laguna del Castillo; Chiha, Coclé).

*Doricha bryantæ* LAWRENCE, Ann. Lyc. Nat. Hist. N. Y., viii, May, 1867, 483 (Costa Rica; coll. U. S. Nat. Mus.); ix, 1868, 123 (Dota and Las Cruces de Candelária, Costa Rica; descr. female).—FRANTZIUS, Journ. für Orn., 1869, 316 (Costa Rica).—SALVIN, Proc. Zool. Soc. Lond., 1870, 209 (Volcán de Chiriquí, Cordillera del Chucu, Castillo and Laguna del Castillo, Panamá); Cat. Birds Brit. Mus., xvi, 1892, 384 (Boquete de Chitra, etc.).—MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., iii, livr. 4, 1877, pl. 49; iv, livr. I, 1877, 42, pl. 103.—ELLIOT, Classif. and Synop. Troch., 1879, 125.—GOULD, Mon. Troch., Suppl., 1881, pl. 53.—ZELEDÓN, Cat. Aves de Costa Rica, 1882, 21; Anal. Mus. Nac. Costa Rica, i, 1887, 122 (Naranjo de Cartago, Costa Rica).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 347.

[*Doricha*] *bryantæ* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 85.

[*Doricha*] *bryantæ* MULSANT, Ann. Soc. Linn. Lyon, n. s., xxii, 1876, 226.

*Dorycha bryantæ* BOUCARD, Proc. Zool. Soc. Lond., 1878, 70 (San José and Volcán de Irazú, Costa Rica); The Hum. Bird, ii, 1892, 73 (Veragua).

[*Calliphlox*] *bryantæ* HARTERT, Das Tierreich, Troch., 1900, 198 (monogr.).

[*Calliphlox*] *bryantæ* SHARPE, Hand-list, ii, 1900, 139.

*Calliphlox bryantæ* BANGS, Proc. New Engl. Zool. Club, iii, 1902, 31 (Boquete and Volcán de Chiriquí, 4,000-5,800 ft.).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 545 (highlands of Costa Rica; habits).

[*Philodice*] *bryantæ* SIMON, Cat. Troch., 1897, 37.

*Nesophlox bryantæ* RIDGWAY, Proc. Biol. Soc. Wash., xxiii, April, 1910, 55.

[*Calothorax*] *bryantæ* GRAY, Hand-list, i, 1869, 135, no. 1732.

*Dorycha bryanthæ* BOUCARD, Gen. Hum. Birds, 1892, 27.

<sup>a</sup> Ten specimens, from Costa Rica.

## Genus DORICHA Reichenbach.

[*Calliphlox*.] *β. Doricha* REICHENBACH, Aufz. der Colibr., 1854, 12; Troch. Enum., 1855. (Type, *Trochilus enicurus* Vieillot.)

*Dolicha a* (emendation) HEINE, Journ. für Orn., vi, May, 1863, 208, in text.

*Elisa* "Reich[enbach]" BONAPARTE, Ann. Sci. Nat., 1854, 138. (Type, by tautonymy, *Trochilus eliza* Lesson and Delattre.)

*Amathusia* (not of Fabricius, 1808, nor Rafinesque, 1815) MULSANT and VERREAUX, Mém. Soc. Imp. Sci. Nat. Cherb., xii (sér. 2, ii), 1866, 229 (Classif. Troch., 1866, 85). (Type, *Trochilus enicurus* Vieillot.)

*Amalasia* MULSANT, Ann. Soc. Linn. Lyon, n. s., xxii, 1876, 225 (Cat. Ois.-Mouch., 29). (Type, *Trochilus enicurus* Vieillot.)

*Amalusia* (emendation?) MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., iv, 1877, 15.

Small Trochilidæ (length, including long bill and tail, about 72–121 mm.) resembling *Calothorax* in the long, slender, decurved bill and in coloration, but adult males with tail longer than wing, the lateral rectrices rounded terminally and gorget not elongated laterally, the adult females with tail deeply forked or strongly double-rounded.

Bill much longer than head, slender, terete, rather strongly decurved; culmen rounded except basally, where contracted into a rather indistinct ridge; tomia smooth; mandible with the usual longitudinal median groove. Nasal operculum broad and strongly convex (especially anteriorly) nude, but mostly concealed by the decumbent frontal feathering, which extends forward considerably beyond anterior end of nostril, forming a short and obtuse point or antia on each side of culmen. Tarsus feathered, except on posterior and lower portions; middle and outer toes about equal in length, the inner slightly shorter, the hallux shorter than inner toe. Wing less than twice as long as exposed culmen, the outer primary longest, normal in shape. Tail in adult male slightly longer than wing (*D. eliza*) to more than one and a half times as long (*D. enicura*), forked for nearly two-thirds (*D. eliza*) to more than three-fourths its length (*D. enicura*), the lateral rectrices rounded terminally (slightly expanded in *D. eliza*); in adult females tail nearly two-thirds (*D. eliza*) to more than two-thirds (*D. enicura*) as long as wing, forked (but with third rectrix longest) in *D. enicura*, strongly double-rounded in *D. eliza*.

*Coloration*.—Above, including middle rectrices, metallic bronze-green or bronze. Adult males with throat metallic violet or reddish purple (the chin dusky greenish in *D. enicura*), chest and median line of body beneath buffy whitish, sides greenish or bronzy, lateral rectrices purplish black edged, more or less, with light cinnamon-rufous; females dull whitish (*D. eliza*) or cinnamon-buff beneath

<sup>a</sup> "Ex *δολχος* (lang, gestrecht)." (Heine.)

(*D. enicura*), the lateral rectrices cinnamon-rufous basally and tipped with white.

*Range*.—Southeastern Mexico to Guatemala. (Two species.)

KEY TO THE SPECIES OF DORICHA.

- a. Throat bright metallic purple or violet; tail deeply forked, the lateral rectrices without whitish tip. (*Adult males*.)
  - b. Chin black, throat violet; outermost rectrices wholly black; wing not more than 34, tail more than 50. (Guatemala.)....*Doricha enicura*, adult male (p. 648).
  - bb. Chin and throat reddish purple (solferino); outermost rectrices with inner web broadly edged with light cinnamon-rufous; wing more than 34, tail less than 40. (Southeastern Mexico.).....*Doricha eliza*, adult male (p. 650).
- aa. Throat whitish or buffy; tail slightly forked, the lateral rectrices broadly tipped with whitish. (*Adult females*.)
  - b. Under parts cinnamon-buff or vinaceous-cinnamon; lateral rectrices cinnamon-rufous basally; middle rectrices less than 19, exposed culmen less than 22.
 

*Doricha enicura*, adult female (p. 648).
  - bb. Under parts dull buffy whitish; lateral rectrices grayish cinnamon basally; middle rectrices more than 19, exposed culmen 22 or more.
 

*Doricha eliza*, adult female (p. 650).

DORICHA ENICURA (Vieillot).

SLENDER SHEAR-TAIL.

*Adult male*.—Above metallic bronze-green, the back sometimes decidedly bronze or golden; four middle rectrices bronze-green, the next pair bronze-green terminally, purplish black or dusky basally; other rectrices dull black, with a faint gloss of bronzy purplish, the inner web of pair next to the outermost edged with pale rusty or cinnamon; remiges purplish dusky, the inner secondaries glossed with bronze-greenish; chin and upper throat, together with malar, sub-orbital, and auricular regions, dusky metallic bronze-greenish; throat (except upper part) bright metallic violet or phlox purple; chest varying from dull brownish white to pale vinaceous-cinnamon; sides and flanks (broadly) metallic bronze-green; median line of breast and abdomen pale dull brownish gray; under tail-coverts metallic bronze or bronze-green centrally, margined with pale brownish gray or dull whitish; femoral tufts white; bill dull black; iris dark brown; feet dusky; length (skins), 103–121 (110); wing, 31–34 (32.7); tail, 55–61.5 (58.4), middle rectrices 9.5–14 (11.5); exposed culmen, 18–20.5 (19).<sup>a</sup>

*Adult female*.—Above similar to the adult male, but two outer rectrices (on each side) broadly and abruptly tipped with white, this preceded by a broad subterminal area of blackish, the remainder mostly light cinnamon-rufous or vinaceous-cinnamon, the third rectrix similar but (usually at least) without any white at tip; a post-

<sup>a</sup>Ten specimens.



ocular spot of buff, and beneath this an indistinct auricular area of dusky grayish; under parts, including malar region, pale cinnamon-rufous or vinaceous-cinnamon; femoral tufts white; bill, etc., as in adult male; length (skins), 72–89 (81); wing, 35–39 (36.6); tail, 24–30 (26.6), middle rectrices 13.5–18 (15.8); exposed culmen, 18.5–21.5 (20.4).<sup>a</sup>

Highlands of Guatemala (Guatemala City; Cobán, Vera Paz; Dueñas; Atitlán; Panajachel).

*Trochilus enicurus* VIEILLOT, Nouv. Dict. d'Hist. Nat., xxiii, 1818, 429 ("Brazil"—error; coll. M. Laugier).—TEMMINCK, Pl. Col., iv, livr. 2, 1831, pl. 66, fig. 3.

[*Trochilus*] *enicurus* VIEILLOT, Tabl. Enc. Méth., ii, 1822, 560.

[*Calothorax*] *enicurus* GRAY, Gen. Birds, i, Dec., 1848, 110.

[*Calothorax*] *enicurus* BONAPARTE, Consp. Av., i, 1850, 85.—GRAY, Hand-list, i, 1869, 135, no. 1730.

*Thaumastura enicura* GOULD, Mon. Troch., pt. iv, Oct., 1852; vol. iii, 1861, pl. 157.—SCLATER and SALVIN, Ibis, 1859, 129 (Dueñas, Guatemala; habits).

*Taumastura enicura* DE OCA, La Naturaleza, iii, 1875, 203; Troq. de Mex., 1875, 45, pl. (9), fig. 33.

[*Lucifer*] *enicurus* BONAPARTE, Rev. et Mag. de Zool., 1854, 257.

[*Myrtis*] *enicura* CABANIS and HEINE, Mus. Hein., iii, 1860, 59 (Guatemala).

*Doricha enicura* GOULD, Introd. Troch., oct. ed., 1861, 95.—ELLIOT, Classif. and Synop. Troch., 1879, 124.—SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 381, 667 (Dueñas, Cobán, Panajachel, and Atitlán, Guatemala).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 345.—BOUCARD, Gen. Hum. Birds, ii, 1892, 25 (Cobán).

*Amathusia enicura* MULSANT and VERREAUX, Classif. Troch., 1866, 85.

*Amalusia enicura* MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., iv, livr. 1, 1877, 16.

[*Amalasia*] *enicura* MULSANT, Ann. Soc. Linn. Lyon, n. s., xxii, 1876, 225.

[*Calliphlox*.] *β. Doricha henicura* REICHENBACH, Aufz. der Colibr., 1854, 12.

[*Calliphlox*] *henicura* REICHENBACH, Troch. Enum., 1855, 10, pl. 840, figs. 4981–4983.

*Thaumastura henicura* SALVIN and SCLATER, Ibis, 1860, 40 (Dueñas; habits).—SALVIN Ibis, 1860, 196, 263, 264 (Dueñas; habits); 1864, 376.—SCLATER, Cat. Am. Birds, 1862, 299 (Dueñas).

[*Doricha*] *henicura* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 85.—SHARPE, Hand-list, ii, 1900, 140.

*Doricha henicura* SALVIN, Cat. Strickl. Coll., 1881, 365.

[*Doricha*] *henicura* HEINE and REICHENOW, Nom. Mus. Hein. Orn., 1890, 184 (Guatemala).—HARTERT, Das Tierreich, Troch., 1900, 199.

[*Doricha*] *henicura* SIMON, Cat. Troch., 1897, 38.

*Amalasia henicura* BOUCARD, Liste Ois. récol. Guat., 1878, 46.

*Ornismya heteropygia* LESSON, Hist. Nat. Ois.-Mouch., 1829, pp. xxi, 72, pl. 15 (locality not given; coll. Laugier); Index Gen. et Synop. Troch., 1832, p. xxxii ("Trinidad"); Suppl. Ois.-Mouch., 1830–31, 97.

*Ornismya swainsonii* LESSON, Hist. Nat. Ois.-Mouch., 1829, 197, pl. 70 (= female).

<sup>a</sup> Eight specimens.

## DORICHA ELIZA (Lesson and Delattre).

## MEXICAN SHEAR-TAIL.

*Adult male*.—Above metallic bronze or bronze-green, duller on pileum, the forehead sometimes dull brownish gray; three lateral rectrices (on each side) purplish bronzy black, the inner web of second and third broadly edged with light cinnamon; remiges deep brownish gray, very faintly glossed with purplish; chin (except anterior portion) and throat bright metallic solferino purple, tinged with violet laterally or posteriorly; chest white; median portion of breast, abdomen, and under tail-coverts dull white, the latter (and sometimes lower abdomen) tinged with cinnamon-buff; sides and flanks (broadly) metallic bronze or bronze-green; femoral tufts white; bill dull black; iris dark brown; legs and feet dusky; length (skins), 86–97 (93); wing, 34.5–36.5 (35.5); tail, 35.5–38 (37.1), middle rectrices 10–12.5 (11); exposed culmen, 20.5–22.5 (21.3).<sup>a</sup>

*Adult female*.—Above similar to the adult male, but three outer rectrices (on each side) with basal half (more or less) light cinnamon-rufous, the two outermost broadly tipped with white and crossed by a broad subterminal area of black, the third with terminal half black, with or without a small white tip; the second and third with more or less of metallic bronze-green between the cinnamon-rufous and black areas; under parts dull grayish white, more or less tinged with brownish buffy, especially on flanks and under tail-coverts, the sides and flanks (broadly) glossed with metallic bronze or bronze-green; bill, etc., as in adult male; length (skins), 82–85 (83); wing, 37.5–46 (38.7); tail, 23–25 (24.4), middle rectrices 19.5–23 (20.8); exposed culmen, 22–23 (22.4).<sup>b</sup>

Southeastern Mexico, in States of Vera Cruz (Jalapa; Barranca de Jico, near Jalapa; Miradór; Córdoba; Llano de Camerones, near Vera Cruz) and Yucatan (Mérida; Progreso; Sisál; Holbox Island).

*Trochilus eliza* LESSON and DELATTRE, Rev. Zool., 1839, 20 (between Vera Cruz and Jalapa, Vera Cruz, Mexico).

*C[alothorax] eliza* GRAY, Gen. Birds, i, Dec., 1848, 110.

*Calothorax eliza* SCLATER, Proc. Zool. Soc. Lond., 1856, 288 (Córdoba, Vera Cruz).

[*Doricha*] *eliza* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 85.—SHARPE, Hand-list, ii, 1900, 140.

*Doricha eliza* FERRARI-PEREZ, Proc. U. S. Nat. Mus., ix, 1886, 157 (Jalapa).

*D[oricha] eliza* HARTERT, Das Tierreich, Troch., 1900, 200.

[*Lucifer*] *β. Myrtis elisa* REICHENBACH, Aufz. der Colibr., 1854, 13.

[*Lucifer*] *elisa* REICHENBACH, Troch. Enum., 1855, 10, pl. 845, figs. 4996–4998.—BONAPARTE, Rev. et Mag. de Zool., 1854, 257.

*Thaumastura elizæ* GOULD, Mon. Troch., pt. xiii, May, 1857; vol. iii, 1861, pl. 155.—SCLATER, Cat. Am. Birds, 1862, 299 (Mexico).—DE OCA, Proc. Ac. Nat. Sci. Phila., 1860, 552 (habits); La Naturaleza, iii, 1875, 17.

<sup>a</sup> Seven specimens.

<sup>b</sup> Four specimens.

*Taumatstura elisæ* DE OCA, Troq. de Mex., 1875, 7, pl. (1), fig. 2.

*Doricha elisæ* GOULD, Introd. Troch., oct. ed., 1861, 94.—ELLIOT, Classif. and Synop. Troch., 1879, 125.—BOUCARD, Ann. Soc. Linn. Lyon, xxii, 1876, 22; Notes Troch. du Mex., 1875, 9 (Jalapa); Gen. Hum. Birds, ii, 1892, 26 (Jalapa; Progreso, Yucatan).—SALVIN, Ibis, 1889, 365 (Holbox I., Yucatan); Cat. Birds Brit. Mus., xvi, 1892, 382 (Jalapa and Córdova, Vera Cruz; Sisál and Holbox I., Yucatan).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 346.

*Amathusia (Doricha) elizæ* MULSANT and VERREAUX, Classif. Troch., 1866, 85.

[*Calothorax*] *elizæ* GRAY, Hand-list, i, 1869, 135, no. 1731.

*Amalusia elizæ* MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., iv, livr. 1, 1877, 20.

[*Amalasia*] *elizæ* MULSANT, Ann. Soc. Linn. Lyon, n. s., xxii, 1876, 225.

*Doricha elisæ* BOUCARD, Proc. Zool. Soc. Lond., 1883, 451 (Progreso, Yucatan; habits).

[*Doricha*] *elizæ* SIMON, Cat. Troch., 1897, 38.

### Genus CALOTHORAX Gray.

*Calothorax* GRAY, List Gen. Birds, 1840, 13. (Type, *Cyananthus lucifer* Swainson.)

*Callothorax* (emendation) BONAPARTE, Rev. et Mag. Zool., May, 1854, 257.<sup>a</sup>

*Callithorax* (emendation) SIMON, Cat. Troch., 1897, 37.

*Lucifer* REICHENBACH, Synop. Av. Nat., 1849, pl. 39. (Type, *Cyananthus lucifer* Swainson.)

*Cyanopogon* "REICH[ENBACH]" BONAPARTE, Ann. Soc. Nat., ser. 4, i, 1854, 138. (*Nomen nudum*.)

*Manilia* MULSANT and VERREAUX, Mém. Soc. Imp. Sci. Nat. Cherb., xii (sér. 2, ii), 1866, 230, in text (Classif. Troch., 1866, 86). (Type, *Calothorax pulchra* Gould.)

Small Trochilidæ (length, including very long bill, about 80–95 mm.) with long, slender and more or less decurved bill, the adult males with tail three-fourths as long as wing, forked and lateral rectrices stiff and narrow (acicular in one species), uniform blackish, and with a gorget of bright metallic purple (changing to violet), the posterior lateral feathers of which are much elongated, the chest white; the adult females with tail less than two-thirds as long as wing, rounded or double-rounded, the lateral rectrices not narrow, broadly tipped with white, black subterminally, and rufous basally, the under parts buffy passing into white on abdomen or dull white with sides and flanks buffy.

Bill decidedly to very much longer than head, slender, more or less decurved, terete; culmen rounded except basally, where contracted into a rather distinct ridge; tomia smooth; mandible with a distinct longitudinal median narrow groove. Nasal operculum broad and convex but covered by the appressed frontal feathering, which extends forward to beyond anterior end of nostrils, forming a short point or antia on each side of culmen. Tarsus feathered except on posterior side and extreme lower portion; lateral toes about equal in length,

<sup>a</sup> But the name used in a different sense generically.



very slightly shorter than middle toe, the hallux shorter than lateral toes. Wing relatively small, less than twice as long as exposed culmen in adult males, about twice as long in females, the outermost primary longest and distinctly narrowed and incurved terminally in adult males. Tail about three-fourths as long as wing in adult males, rather deeply forked but with outermost rectrix not longer than next pair, all the longer rectrices narrow (the lateral ones acicular in one species); in adult female tail less than two-thirds as long as wing, rounded or double-rounded, all the rectrices normally broad.

*Coloration*.—Above metallic bronze-green, greenish bronze, or bronze, including middle rectrices; under parts mostly whitish medially, greenish, bronzy, or buffy laterally. Adult males with chin and throat brilliantly metallic reddish purple changing to violet or even blue (the posterior-lateral feathers of the "gorget" much elongated), the chest dull white, the lateral rectrices wholly blackish; adult female with throat and chest buffy or whitish, and lateral rectrices cinnamon-rufous basally, then blackish, the two or three outermost pairs tipped with white.

*Range*.—Mountains of Mexico, including adjacent parts of Texas, New Mexico, and Arizona. (Two species.)

#### KEY TO THE SPECIES OF CALOTHORAX.

- a. Throat brilliant metallic purple; tail deeply forked, the lateral rectrices narrow, pointed, wholly purplish black. (*Adult males*.)
- b. Bill longer, the exposed culmen 20–22.5 (21.2), strongly decurved; outermost rectrix very narrow, attenuate-acuminate or acicular terminally. (Whole of Mexico and adjacent portion of United States.)

*Calothorax lucifer*, adult male (p. 652).

- bb. Bill shorter, the exposed culmen 18.5–19 (18.7), very slightly if at all decurved; outermost rectrix broader, rounded at tip. (Southern Mexico.)

*Calothorax pulcher*, adult male (p. 655).

- aa. Throat buff (more or less deep); tail double-rounded, the lateral rectrices broadly tipped with white. (*Adult females*.)

- b. Bill longer, exposed culmen 19.5–22 (averaging 21.1), decidedly decurved.

*Calothorax lucifer*,<sup>a</sup> adult female (p. 653).

- bb. Bill shorter (17–18.5, averaging 17.9), slightly if at all decurved.

*Calothorax pulcher*,<sup>a</sup> adult female (p. 655).

#### CALOTHORAX LUCIFER (Swainson).

##### LUCIFER HUMMING BIRD.

*Adult male*.—Above metallic bronze, bronze-green, or golden green, usually duller on pileum, especially on forehead; remiges dull brownish slate or dusky, faintly glossed with purplish; four middle rectrices metallic green or bronze-green, the rest of tail purplish or

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<sup>a</sup> I do not know of any other character which will serve to invariably distinguish between the females of these two species. All the measurements inosculate, except length of bill, but average decidedly less in *C. pulcher* than in *C. lucifer* except length of tail, which is slightly greater.

bronzy dusky or blackish; a small postocular spot (sometimes also a rictal spot) of dull whitish; chin and throat brilliant metallic solferino or magenta purple, changing to violet, the posterior feathers of sides of throat much elongated; chest dull white; sides and flanks mixed light cinnamon and metallic bronze or bronze-green, the median portion of breast and abdomen pale grayish or dull grayish white; under tail-coverts dull white with a central area of pale brownish gray; femoral tufts white; bill dull black; iris dark brown; feet dusky; length (skins), 84–96 (89); wing, 36–39 (37.6); tail, 27–31 (28.6), middle rectrices 14–16.5 (15.3); exposed culmen, 19.5–22 (21.1).<sup>a</sup>

*Adult female*.—Above as in adult male but lateral rectrices much broader, the three outermost (on each side) with basal half (approximately) light cinnamon-rufous, then (distally) purplish black, the two outermost broadly tipped with white, the black terminal or subterminal area on second and third separated from the cinnamon-rufous of basal portion by a narrow space of metallic bronze-green; fourth rectrix (from outside) mostly metallic bronze-green but terminal or subterminal portion blackish and outer web edged basally with light cinnamon-rufous; a postocular spot or streak of cinnamon-buff, and beneath this a narrow auricular area of grayish brown; malar region and underparts dull light vinaceous-cinnamon or cinnamon-buff, passing into dull whitish on abdomen, the under tail-coverts mostly (sometimes almost wholly) whitish; femoral tufts white; bill, etc., as in adult male; length (skins), 83–92 (87); wing, 39–44 (41.2); tail, 23–27 (24.7), middle rectrices 16–21 (20); exposed culmen, 20–22.5 (21.2).<sup>b</sup>

Mexico, in States of Sinaloa (Mazatlán; Sierra Madre), Jalisco (Bolaños; Lake Chapala), Durango (Rancho Baillón), Guanajuato (Tupátaro), Nuevo León (Monterrey), San Luis Potosí (Sierra de San Luis Potosí; Hacienda La Parada), Vera Cruz (Miradór; Jalapa; Orizaba; Córdoba; San Andrés Tuxtla), Puebla (Chalchicomula), Mexico (Temascáltepec; Valley of Mexico; Ajusco; Tetelco; San Antonio, Coapa; Hacienda Eslava; Ixtapalapa), Hidalgo (Reál del Monte), Guerrero (Chilpancingo), and Chiapas (Ocozucuantla), and northward into southern Arizona (Camp Bowie) and southwestern Texas (Chisos Mountains, breeding).

*Cyananthus lucifer* SWAINSON, Philos. Mag., n. s., i, 1827, 442 (Temascáltepec, Mexico).—BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 444, in text.

*C[alothorax] lucifer* GRAY, Gen. Birds, i, Dec., 1848, 110.—CABANIS and HEINE, Mus. Hein., iii, 1860, 55.—HEINE, Journ. für Orn., 1863, 207.—COUES, Key N. Am. Birds, 2d ed., 1884, 466.—HARTERT, Das Tierreich, Troch., 1900, 193.

<sup>a</sup> Ten specimens.

<sup>b</sup> Eight specimens.

- [*Calothorax*] *lucifer* BONAPARTE, Consp. Av., i, 1850, 85.—GRAY, Hand-list, i, 1869, 135, no. 1728.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 84.—MULSANT, Ann. Soc. Linn. Lyon, n. s., xxii, 1876, 226.—SHARPE, Hand-list, ii, 1900, 139.
- Calothorax lucifer* SCLATER, Proc. Zool. Soc. Lond., 1856, 288 (Córdoba, Vera Cruz); 1864, 177 (City of Mexico); Cat. Am. Birds, 1862, 298.—GOULD, Introd. Troch., oct. ed., 1861, 90.—LAWRENCE, Mem. Bost. Soc. N. H., ii, 1874, 291 (Sierra Madre, Sinaloa); Bull. Nutt. Orn. Club, ii, 1877, 108, 109 (Camp Bowie, Arizona).—MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., iv, livr. 1, 1877, 26.—ELLIOT, Classif. and Synop. Troch., 1879, 118 (Jalapa; Córdoba).—ALLEN, Bull. Nutt. Orn. Club, v, 1880, 90 (Arizona).—RIDGWAY, Proc. U. S. Nat. Mus., iii, 1880, 187, 219, 233, 314; Nom. N. Am. Birds, 1881, no. 344; Rep. U. S. Nat. Mus. for 1890 (1891), 359, pl. 42 (monogr.; habits); Man. N. Am. Birds, 2d ed., 1896, 598.—COUES, Check List, 2d ed., 1882, no. 418.—SUMICHRIST, La Naturaleza, v, 1881, 250 (Valley of Mexico; Orizaba, Vera Cruz).—SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 390 (Sierra de San Luís Potosí; Real del Monte, Hidalgo; localities in Valley of Mexico; Córdoba).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 350.—BOUCARD, Gen. Hum. Birds, ii, 1892, 14.—AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Auk, x, 1893, 62; Check List, 2d ed., 1895, no. 437; 3d ed., 1910, 205.—BENDIRE, Life Hist. N. Am. Birds, ii, 1895, 222.—BAILEY (Florence M.), Handb. Birds W. U. S., 1902, 242, fig. 321.—OBERHOLSER, Auk, xix, 1902, 300 (Chisos Mts., s. w. Texas).—MILLER (W. DeW.), Bull. Am. Mus. N. H., xxi, 1906, 167 (Rancho Baillón, n. w. Durango).
- [*Callithorax*] *lucifer* SIMON, Cat. Troch., 1897, 37.
- Trochilus lucifer* FINSCH, Abth. Nat. Mus. Brem., 1870, 329 (Mazatlán, Sinaloa).—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886, no. 437.—HERRERA, La Naturaleza, (2), i, 1891, 322 (Valley of Mexico).
- [*Trochilus*] *lucifer* RIDGWAY, Man. N. Am. Birds, 1887, 316.
- Ornismya cyanopogon* LESSON, Hist. Nat. Ois.-Mouch., 1829, pp. xvi, xlvi, 50, pl. 5 (Mexico; coll. Rivoli); Suppl. Ois.-Mouch., 1830-31, 117, 119, pls. 9, 10; Traité d'Orn., 1831, 274; Index Gen. et Synop. Troch., 1832, p. xxiii.
- Trochilus cyanopogon* SWAINSON, Birds Brazil, Mex., etc., [1841?], pl. 77.
- Lucifer cyanopogon* REICHENBACH, Aufz. der Colibr., 1854, 13; Troch. Enum., 1855, 10, pl. 843, figs. 4990, 4991.
- [*Lucifer*] *cyanopogon* BONAPARTE, Rev. et Mag. de Zool., 1854, 257.
- [*Calothorax*] *cyanopogon* GRAY, Gen. Birds, i, Dec., 1848, 13.
- Calothorax cyanopogon* GOULD, Mon. Troch., pt. xvi, Sept., 1857, pl. 1; vol. iii, 1861, pl. 143; Introd. Troch., oct. ed., 1861, 90.—VILLADA, La Naturaleza, ii, 1874, 357, fig. 4.—BOUCARD, Ann. Soc. Linn. Lyon, xxii, 1876, 21 (San Andrés Chalchicomula, Puebla); Notes Troch. du Mex., 1875, 8 (Puebla; San Andrés Tuxtla, Vera Cruz; Mexico; habits).—DE OCA, La Naturaleza, iii, 1875, 104, pl. 7, fig. 24; Troq. de Mex., 1875, 34, pl. (7), fig. 24.
- Ornismya (Lucifer) cyanopogon* MULSANT and VERREAUX, Classif. Troch., 1866, 91.
- Trochilus simplex* LESSON, Hist. Nat. Colibris, 1830-31, 86, pl. 23 ("Brésil"; = female); Traité d'Orn., 1831, 291 ("Brésil"); Index Gen. et Synop. Troch., 1832, p. xiii.
- Trochilus corruscus* LICHTENSTEIN, Preis-Verz. Mex. Vög., 1830, 1; Journ. für Orn., 1863, 55.
- (?)[*Lucifer*. *δ*. *Calothorax*] *tendali* REICHENBACH, Aufz. der Colibr., 1854, 13 ("Peru;" ex *Trochilus tendali* Tschudi).
- Ornismya labrador* BOURCIER, Ann. Sci. Phys. et Nat. d'Agric. Lyon, ii, March, 1839, pl. 8 (Mexico).



[*Lucifer*] *labrador* BONAPARTE, Rev. et Mag. de Zool., 1854, 257.

*Doricha enicura* (not *Trochilus enicurus* Vieillot) HENSHAW, Rep. Orn. Spec. Wheeler's Surv., 1873 (1874), 162 (Camp Lowell, Arizona); Am. Sportsman, v, 1875, 328 (Camp Bowie); Zool. Expl. W. 100th Merid., 1875, 381 (Camp Bowie; see Lawrence, Bull. Nutt. Orn. Club, ii, 1877, 108).

*T[rochilus] cohualt* DE LA LLAVE, Registro Trimestre, ii, no. 5, Jan., 1833, 47 (Mexico; see Richmond, Auk, xvi, 1899, 324).

### CALOTHORAX PULCHER (Gould).

#### BEAUTIFUL HUMMING BIRD.

Similar to *C. lucifer*, but bill much more slender and less decurved; adult male with lateral rectrices much broader (nearly as wide as next pair), rounded (instead of acuminate) at tip, the tail much longer; adult female with under parts much less rufescent (more buffy grayish).

*Adult male*.—Above metallic bronze or bronze-green, including four middle rectrices, the rest of tail plain purplish bronzy black; remiges dull brownish slate or dusky, faintly glossed with purplish; a small postocular spot of whitish; chin and throat brilliant metallic magenta purple, changing to violet and blue, the more posterior feathers on sides of throat much elongated; chest dull white or grayish white, the median portion of breast similar, passing into metallic bronze or bronze-green on sides and into light cinnamon-rufous on flanks; femoral tufts and under tail-coverts white; bill dull black; iris dark brown; feet dusky; length (skins), 77–89 (84); wing, 35–39 (36.7); tail, 28–31.5 (29.2), middle rectrices 12–16.5 (13.9); exposed culmen, 17–18.5 (17.9).<sup>a</sup>

*Adult female*.—Above metallic bronze or bronze-green, duller (sometimes dull grayish brown) on pileum or forehead; middle pair of rectrices bright bronze-green, the next pair similar but becoming blackish terminally or subterminally; three lateral rectrices (on each side) with basal half (approximately) light cinnamon-rufous, then (distally) black, the two outermost broadly tipped with white (the third sometimes with a small apical spot of white); remiges dull brownish slate or dusky, faintly glossed with purplish; under parts pale dull grayish buffy, deepening on sides and flanks into more decided cinnamon-buff; femoral tufts white; bill, etc., as in adult male; length (skins), 81–82 (81.5); wing, 36.5–40.5 (38.5); tail, 22–24 (23); exposed culmen, 18.5–19 (18.7).<sup>b</sup>

Southern Mexico, in States of Puebla (Tehuacán; Chalchicomula), Oaxaca (Putla; Tehuán-tepec; Oaxaca; Tamazulapám) and Guerrero (Venta de Zopilote).

*Calothorax pulchra* GOULD, Ann. and Mag. Nat. Hist., 3d ser., iv, 1859, 97 (Oaxaca, Mexico; coll. J. Gould); Mon. Trocho., pt. xix, May, 1860; vol. iii, 1861, pl. 144; Introd. Troch., oct. ed., 1861, 91.—SCLATER, Proc. Zool. Soc. Lond.,

<sup>a</sup> Eight specimens.

<sup>b</sup> Three specimens.

- 1859, 386 (Oaxaca).—DE OCA, *La Naturaleza*, iii, 1875, 105; Troq. de Mex., 1875, 36, pl. (7), fig. 25.—BOUCARD, *Ann. Soc. Linn. Lyon*, xxii, 1876, 22 (Putla, Oaxaca); *Notes Troch. du Mex.*, 1875, 9 (Putla); *Gen. Hum. Birds*, ii, 1892, 14 (Oaxaca).—LAWRENCE, *Bull. Nutt. Orn. Club*, ii, 1877, 109, in text (remarks on coloration of female).—ELLIOT, *Classif. and Synop. Troch.*, 1879, 118 (Oaxaca).—SALVIN, *Cat. Birds Brit. Mus.*, xvi, 1892, 391 (Oaxaca; Tehuán-tepec; Venta de Zopilote, Guerrero).—RIDGWAY, *Man. N. Am. Birds*, 2d ed., 1896, 598.
- [*Calothorax*] *pulchra* GRAY, *Hand-list*, i, 1869, 135, no. 1734.
- Calothorax pulchra* RIDGWAY, *Rep. U. S. Nat. Mus. for 1890* (1891), 358 (diagnosis, etc.).
- Calothorax pulcher* HEINE, *Journ. für Orn.*, 1863, 207.—HARTERT, *Das Tierreich*, Troch., 1900, 194.
- [*Calothorax*] *pulcher* SCLATER and SALVIN, *Nom. Av. Neotr.*, 1873, 84.—SHARPE, *Hand-list*, ii, 1900, 139.
- Calothorax pulcher* SALVIN and GODMAN, *Biol. Centr.-Am.*, Aves, ii, 1892, 351.
- [*Callithorax*] *pulcher* SIMON, *Cat. Troch.*, 1897, 37.
- Amathusia* (*Manilia*) *pulchra* MULSANT and VERREAUX, *Classif. Troch.*, 1866, 86.
- Manilia pulchra* MULSANT and VERREAUX, *Hist. Nat. Ois.-Mouch.*, ii, livr. 2, 1875, pl. 23; iv, livr. 1, 1877, 30.
- [*Manilia*] *pulchra* MULSANT, *Ann. Soc. Linn. Lyon*, n. s., xxii, 1876, 226.
- Trochilus pulcher* RIDGWAY, *Man. N. Am. Birds*, 1887, 316.
- Calliphlox mitchelli* (not *Trochilus mitchelli* Bourcier) DE OCA, *Los Colibris, Mex.*, 1875, 43, pl. (9), fig. 31.

### Genus ORTHORHYNCHUS Lacépède.

- Orthorhynchus* LACÉPÈDE, *Tabl. Ois.*, 1799, 9. (Type, as fixed by Gray, *List Gen. Birds*, 1840, 14, *Trochilus cristatus* Linnæus; see Oberholser, *Smithson. Misc. Coll.*, xlviii, 1905, 60, 61.)
- Orthorhynchus* (emendation) BONAPARTE, *Consp. Av.*, i, 1850, 83.
- Bellona* (not of Reichenbach, 1852) MULSANT and VERREAUX, *Mém. Soc. Imp. Sci. Nat. Cherbourg*, xii, 1866, 219; *Classif. Troch.*, 1865, 75. (Type, *Trochilus cristatus* Linnæus.)
- Microlyssa* RILEY, *Auk*, xxi, Oct., 1904, 485. (Type *Trochilus exilis* Gmelin.)

Small Trochilidæ (length about 73–95 mm.) with basal half (more or less) of maxilla feathered, tarsus naked, tail three-fifths to nearly two-thirds as long as wing, rounded, the adult male with a flat, pointed occipital crest, which, with forehead and crown is brilliant metallic green or else the crest (at least terminally) violet or violet-blue.

Bill straight, terete, rather slender, longer from rictus than head, but the unfeathered portion much shorter than head, the frontal feathering advancing over base of maxilla to nearly half the distance from rictus to tip of maxilla in adult females, to considerably more in adult males; culmen rounded except basally, where contracted into a more or less distinct ridge; tomia smooth; mandible with the usual lateral median groove very distinct. Nasal operculum narrow, nude, but wholly concealed by the closely appressed frontal feathering, which extends far anterior to nostrils, forming a distinct point or antia on each side of culmen. Tarsus wholly unfeathered;

inner toe about as long as middle toe, the outer slightly shorter. Wing more than four to more than five times as long as exposed culmen, the outermost primary longest, strongly incurved and broadly rounded terminally. Tail three-fifths to nearly two-thirds as long as wing, slightly rounded in adult males, more strongly rounded, with middle rectrices usually shorter than second pair, in adult females, the rectrices rather broad, rounded terminally.

*Coloration*.—Adult males with pileum, including occipital crest, brilliant metallic green (the crest more bluish terminally) or the crest metallic blue or violet (at least in part); rest of upper parts rather dark metallic green, the tail purplish black; under parts sooty blackish, passing into sooty gray on chin and throat. Adult females and young bronze-green above, including middle rectrices, gray beneath; lateral rectrices purplish black, more or less bronzy or greenish basally, tipped with gray.

*Range*.—Lesser Antilles; island of Tobago. (Three species, or subspecies.)

This genus is so evidently closely related to *Chrysolampis* that it is difficult to understand why they should be so widely separated in most classifications of the group.

KEY TO THE SPECIES AND SUBSPECIES OF ORTHORHYNCUS.

- a. Pileum and pointed occipital crest brilliantly metallic. (*Adult males*.)
  - b. Occipital crest green or mostly green, like crown and forehead. (*Orthorhyncus exilis*.)
    - c. Occipital crest very faintly, if at all, tinged with blue at tip. (Porto Rico, St. Thomas, etc., of Greater Antilles, and Lesser Antilles except St. Vincent, Barbados, Grenada, and Grenadines.)
      - Orthorhyncus exilis exilis*, adult male (p. 658).
    - cc. Occipital crest distinctly blue terminally. (St. Vincent.)
      - Orthorhyncus exilis ornatus*, adult male (p. 661).
  - bb. Occipital crest (abruptly) violet or violet-blue. (*Orthorhyncus cristatus*.)
    - c. Crest more decidedly violet; throat darker gray. (Barbados.)
      - Orthorhyncus cristatus cristatus*, adult male (p. 662).
    - cc. Crest more bluish violet to violet-blue; throat paler gray. (Grenada and Grenadines).....*Orthorhyncus cristatus emigrans*, adult female (p. 664).
- aa. Pileum metallic green (not brilliant); no crest.
  - b. Under parts of body dark sooty; lateral rectrices without distinct gray tip. (*Immature males*.)<sup>a</sup>
  - bb. Under parts of body gray. (*Adult females*.)<sup>a</sup>

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<sup>a</sup> I am unable to give characters for certain identification of immature males and adult females.



## ORTHORHYNCUS EXILIS EXILIS (Gmelin).

## GILT-CRESTED HUMMING BIRD.

Similar to *O. e. ornatus*, but adult male with crest wholly green or merely tinged with blue terminally, and under parts paler.

*Adult male*.—Forehead and whole crown, including much the greater part of occipital crest, very bright metallic green, golden green, or golden, the longer feathers of the crest usually more bluish green, but never distinctly nor abruptly blue; hindneck and sides of head behind eye and beneath crest dark metallic green or bronze-green, appearing nearly black when viewed from in front; back, scapulars, wing-coverts, rump, and upper tail-coverts metallic bronze-green or bronze; tail black, glossed with purplish bronze; remiges dusky, faintly glossed with purplish; loreal, suborbital, and auricular regions and under parts of body (including under tail-coverts) very dark sooty grayish,<sup>a</sup> becoming paler sooty gray on chin and throat; sides glossed with bronze or bronze-green or mostly of this color; femoral tufts mixed sooty gray and whitish; bill dusky; iris dark brown; feet grayish brown or dusky; length (skins), 73–91 (86.2); wing, 46–51.5 (49.6); tail, 26–32 (27.9); exposed culmen, 7.5–10 (8.8).<sup>b</sup>

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<sup>a</sup> In a specimen from Anegada Island approaching sooty black, as in *O. e. ornatus* and *O. cristatus*.

<sup>b</sup> Seventy-two specimens.

*Adult female*.—Above metallic bronze-green or greenish bronze, including middle rectrices; other rectrices purplish black, the two or three outer pairs rather broadly tipped with light brownish gray and with basal portion rather dull metallic greenish or bronzy, the one next to middle pair with greenish or bronzy basal area more extended; remiges dusky, faintly glossed with violaceous; under parts sooty gray, slightly deeper laterally and posteriorly, paler on chin and throat; bill, etc., as in adult male; length (skins), 71–91 (78); wing, 44–49 (46.3); tail, 26–31 (28.6); exposed culmen, 9–12 (10.6).<sup>a</sup>

*Immature male*.—Similar to the adult male, but without any crest, the pileum being rather dull metallic green, with feathers dusky basally.

<sup>a</sup> Thirty-five specimens.

| Locality.                                   | Wing. | Tail. | Ex-<br>posed<br>culmen. |
|---------------------------------------------|-------|-------|-------------------------|
| MALES.                                      |       |       |                         |
| One adult male from Porto Rico.....         | 47    | 27.5  | 8.5                     |
| Nine adult males from St. Thomas.....       | 48.4  | 28.2  | 9.2                     |
| Two adult males from Anegada.....           | 47.5  | 26    | 9.2                     |
| Seven adult males from Antigua.....         | 48.1  | 27.4  | 8.6                     |
| Two adult males from Barbuda.....           | 47.5  | 27.5  | 9                       |
| One adult male from Sombrero.....           | 47    | 29.5  | 8                       |
| Ten adult males from Santa Lucia.....       | 49    | 28.9  | 8.6                     |
| Three adult males from Martinique.....      | 47.8  | 28.5  | 8.8                     |
| Ten adult males from Dominica.....          | 48.1  | 28.2  | 8.9                     |
| Four adult males from Virgin Gorda.....     | 47.5  | 28    | 8.6                     |
| Seven adult males from Guadeloupe.....      | 48    | 28.9  | 8.8                     |
| Two adult males from Saba.....              | 48    | 28.7  | 8.7                     |
| Four adult males from St. Eustatius.....    | 48.5  | 28.7  | 8.9                     |
| One adult male from Marie Galante.....      | 46.5  | 28    | 8.5                     |
| One adult male from Desirade.....           | 47.5  | 28    | 8                       |
| Eight adult males from St. Christopher..... | 48.6  | 28.2  | 8.5                     |
| FEMALES.                                    |       |       |                         |
| Three adult females from St. Thomas.....    | 44.8  | 28.5  | 11.7                    |
| One adult female from Anegada.....          | 46    | 26    | 12                      |
| One adult female from Antigua.....          | 45    | 29    | 10                      |
| Two adult females from Barbuda.....         | 44.7  | 30.5  | 10.7                    |
| Ten adult females from Santa Lucia.....     | 46.4  | 28.4  | 10.4                    |
| Four adult females from Martinique.....     | 47.7  | 29.4  | 11.2                    |
| Two adult females from Dominica.....        | 46.5  | 28.5  | 10.7                    |
| One adult female from Virgin Gorda.....     | 47    | 28.5  | 11                      |
| Six adult females from Guadeloupe.....      | 47    | 28.6  | 11.5                    |
| One adult female from Saba.....             | 45    | 28    | 10.5                    |
| One adult female from Marie Galante.....    | 47.5  | 29    | 10                      |
| One adult female from Desirade.....         | 45.5  | 28    | 12                      |
| One adult female from St. Christopher.....  | 45    | 29.5  | 11                      |
| One adult female from St. Bartholomew.....  | 46    | 28    | .....                   |

Occasional specimens from Martinique and Santa Lucia have the tip of the crest nearly as blue as examples from St. Vincent (*O. e. ornatus*), and those from Dominica have the tip of the crest more often tinged with blue than those from more northern islands.

Lesser Antilles, except St. Vincent, Barbadoes, Grenada, and Grenadines (recorded from Sombrero, St. Bartholomew, Saba, St. Eustátius, St. Christopher, Nevis, Barbuda, Antígua, Montserrat, Guadeloupe, Grand Terre, Desirade, Marie Galante, Dominíca, Martinique, and Santa Lucía), and Virgin group of Greater Antilles (Virgin Gorda, Anegada, St. Croix, St. Thomas); Porto Rico.

[*Trochilus*] *exilis* GMELIN, Syst. Nat., i, pt. 1, 1788, 484 (based on *Humming bird of a black color* Bancroft, Guj., p. 166; *Little Humming bird* Latham, Synopsis, i, pt. 2, 764).—LATHAM, Index Orn., i, 1790, 310.—GRAY, Hand-list, i, 1869, 147, no. 1902.

*Trochilus exilis* AUDEBERT and VIEILLOT, Ois. Dorés, i, 1802, 125.—VIEILLOT, Nouv. Dict. d'Hist. Nat., vii, 1817, 356 ("Guyane").

*T[rochilus] exilis* VIEILLOT, Tabl. Enc. Méth., ii, 1822, 550.

*M[ellisuga] exilis* GRAY, Gen. Birds, i, Dec., 1848, 113.

[*Orthorhynchus*] *exilis* REICHENBACH, Aufz. der Colibr., 1854, 11; Troch. Enum., 1855, 9, pl. 807, fig. 4879.—BONAPARTE, Rev. et Mag. de Zool., 1854, 256.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 88.

*Orthorhynchus exilis* GOULD, Mon. Troch., pt. xiii, 1857; vol. iv, 1861, pl. 207; Introd. Troch., oct. ed., 1861, 117.—NEWTON (A. and E.), Ibis, 1859, 141 (St. Croix; crit.).—SCLATER, Cat. Am. Birds, 1862, 304 (St. Thomas); Proc. Zool. Soc. Lond., 1889, 326 (Dominíca); 1892, 499 (Anguilla).—TAYLOR, Ibis, 1864, 170 (Martinique; Dominíca).—LAWRENCE, Ann. Lyc. N. Y., viii, 1864, 99 (Sombrero); Proc. U. S. Nat. Mus., i, 1878, 61 (Dominíca), 234 (Antígua), 240 (Barbuda), 358 (Martinique), 458 (Guadeloupe), 487 (Barbuda; Antígua; Guadeloupe; Dominíca; Martinique).—MULSANT and VERREAUX, Classif. Troch., 1866, 75.—ELLIOT, Ibis, 1872, 355 (Dominíca; Nevis; St. Thomas; St. Croix; synonymy).—GUNDLACH, Journ. für Orn., 1874, 312 (Porto Rico); 1878, 182 (Porto Rico).—ALLEN, Bull. Nutt. Orn. Club, v, 1880, 167 (Santa Lucia; crit.).—GRISDALE, Ibis, 1882, 490 (Montserrat; habits).

*O[rthorhynchus] exilis* CABANIS and HEINE, Mus. Hein., iii, 1860, 61 (Martinique; Nevis; St. Croix).

*Orthorhynchus exilis* OBERHOLSER, Smithson. Misc. Coll., xlviii, May 13, 1905, 60.

*Trochilus (Orthorhynchus) exilis* SUNDEVALL, Cefv. k. Vet.-Ak. Förh., 1869, 600 (St. Bartholomew).

*Bellona exilis* MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., iii, livr. 3, 1876, 196 (St. Croix; Nevis; Martinique; etc.).—ELLIOT, Classif. and Synop. Troch., 1879, 179 (Dominíca; Nevis; St. Thomas; St. Croix).—CORY, Auk, iii, 1886, 357; vi, 1889, 218 (crit.; range); vii, 1890, 374 (Anegada), 375 (Virgin Gorda); viii, 1891, 47 (Antígua; St. Eustátius), 48 (St. Croix; St. Christopher; Guadeloupe); Birds West Ind., 1889, 152; Cat. West Ind. Birds, 1892, 13, 107, 144.—VERRILL (G. E.), Trans. Conn. Ac. Arts and Sci., viii, 1892, 334, pl. 26, fig. 6 (Dominíca; habits; descr. nest and eggs).—SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 354.—BOUCARD, Gen. Hum. Birds, ii, 1892, 53 (Dominíca; St. Croix; Montserrat; Nevis; Martinique).—LODGE, Ibis, 1896, 511 (Dominíca; habits).—NICOLL, Ibis, 1904, 562 (Santa Lucia; crit.), 570 (Dominíca).

[*Bellona*] *exilis* MULSANT, Ann. Soc. Linn. Lyon, n. s., xxii, 1876, 222.—CORY, List Birds West Ind., 1885, 18.—SHARPE, Hand-list, ii, 1900, 142.

*B[ellona] cristata exilis* HARTERT, Das Tierreich, Troch., 1900, 213.

*Microlyssa exilis* RILEY, Smithson. Misc. Coll., xlvii, Nov. 8, 1904, 287 (Barbuda; Antígua).



- (?) [*Trochilus*] *crisatellus* LATHAM, Index Orn., Suppl., 1801, p. xxxix (no locality given; based on *Gilt-crested Hummingbird* Latham, Synopsis, Suppl., ii, 172).
- (?) *Trochilus cristatellus* VIEILLOT, Nouv. Dict. d'Hist. Nat., vii, 1817, 352.
- Orthorhynchus chlorolophus* BONAPARTE, Consp. Av., i, 1850, 83 (Martinique).—AUDEBERT and VIEILLOT, Ois. Dorés, i, 1801, 91-93, pls. 47, 48 (Martinique).
- Trochilus cristatus* (not of Linnaeus) VIEILLOT, Nouv. Dict. d'Hist. Nat., vii, 1817, 365, pl. B. 19, fig. 3 ("Cayenne;" Martinique; Guadeloupe).
- T[rochilus] cristatus* VIEILLOT, Tabl. Enc. Méth., ii, 1822, 565.
- Ornismya cristata* LESSON, Les Trochilidéas, 1831, 153, pl. 58 (Martinique); Index Gen. et Synop. Troch., 1832, p. xxx ("Trinidad;" Martinique).
- Bellona cristata* ELLIOT, Classif. and Synop. Troch., 1879, 178, part (Martinique; Santa Lucia).—CORY, Ibis, 1886, 474 (Desirade; Marie Galante), 475 (Grand Terre); Auk, iv, 1887, 96 (Martinique).—SCLATER, Proc. Zool. Soc. Lond., 1889, 395 (Santa Lucia).—RIDGWAY, Proc. U. S. Nat. Mus., xii, 1890, 130 (Santa Lucia).
- Orthorhynchus ornatus* (not of Gould) SCLATER, Proc. Zool. Soc. Lond., 1871, 272 (Santa Lucia; crit.).—SEMPER, Proc. Zool. Soc. Lond., 1872, 651 (Santa Lucia; habits).

### ORTHORHYNCHUS EXILIS ORNATUS (Gould).

#### ST. VINCENT BLUE-CREST.

Similar to *O. e. exilis*, but terminal portion of crest extensively and abruptly blue; similar also to *O. cristatus*, but adult male with blue of crest much more restricted, and greenish blue instead of violet-blue.

*Adult male*.—Forehead and whole crown very bright metallic green or golden, passing into more bluish green posteriorly, the longer feathers of the crest bright metallic blue or greenish blue; hindneck and sides of head behind eyes and beneath crest dark metallic green, appearing nearly black when viewed from in front; back, scapulars, wing-coverts, rump, and upper tail-coverts metallic bronze-green or greenish bronze; tail black, glossed with purplish bronze; remiges dusky, faintly glossed with purplish; loreal, suborbital, and auricular regions and under parts of body (including under tail-coverts) sooty blackish (the sides of breast faintly glossed with green), fading into sooty gray on chin and throat; femoral tufts whitish; bill dull black or dusky; iris dark brown; feet grayish brown or dusky; length (skins), 77-93 (83); wing, 47-51 (48.1); tail, 26.5-31 (28.9); exposed culmen, 9-11 (10.2).<sup>a</sup>

*Adult female*.—Above metallic bronze-green or greenish bronze, including middle rectrices; other rectrices blackish or purplish black terminally or subterminally, the two or three outer ones (on each side) rather broadly tipped with light brownish gray and with basal portion rather dull metallic greenish or bronzy, the one next to middle pair with greenish or bronzy at base more extended; remiges dusky, faintly glossed with violaceous; under parts deep sooty gray,

<sup>a</sup> Eight specimens.

deeper laterally, paler on chin and throat; bill, etc., as in adult male; length (skin), 83; wing, 47; tail, 28; exposed culmen, 12.<sup>a</sup>

Island of St. Vincent, Lesser Antilles; occasional straggler to Martinique? <sup>b</sup>

*Orthorhynchus ornatus* GOULD, Mon. Troch., pt. xxiv, Sept., 1861; vol. iv, 1861, pl. 206 (locality unknown; coll. J. Gould); Introd. Troch., oct. ed., 1861, 117.—ELLIOT, Ibis, 1872, 355 ("Martinique and Santa Lucia"—error?).—LAWRENCE, Proc. U. S. Nat. Mus., i, 1878, 192, 487 (St. Vincent).—LISTER, Ibis, 1880, 42 (St. Vincent; habits).

*Orthorhynchus ornatus* OBERHOLSER, Smithson. Misc. Coll., xlvi, May 13, 1905, 60. [*Trochilus*] *ornatus* GRAY, Hand-list, i, 1869, 148, no. 1903.

*Bellona ornatus* CORY, Auk, vi, July, 1889, 218 (St. Vincent; crit.).

*Bellona ornata* RIDGWAY, Proc. U. S. Nat. Mus., iii, Oct. 27, 1880, 316 (St. Vincent).—SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 354 (St. Vincent).

[*Bellona*] *ornata* SHARPE, Hand-list, ii, 1900, 142 (St. Vincent).

*Bellona exilis ornatus* CORY, Cat. West Ind. Birds, 1892, 13, 107, 134, 144 (St. Vincent).

*Bellona exilis ornata* CLARK (A. H.), Proc. Bost. Soc. N. H., xxxii, 1905, 275 (St. Vincent; descr. nest and eggs).

*Bellona cristata ornata* HARTERT, Das Tierreich, Troch., 1900, 213.

*Bellona cristata* (not *Trochilus cristatus* Linnæus) MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., iii, livr. 3, 1876, 193, part (St. Vincent).—ELLIOT, Classif. and Synop. Troch., 1879, 178, part (St. Vincent).—CORY, Auk, iii, 1886, 356, part (St. Vincent); Ibis, 1886, 473 (St. Vincent); Birds West Ind., 1889, 151, part (St. Vincent).

*Orthorhynchus cristatus* ELLIOT, Ibis, 1872, 355, part (St. Vincent; synonymy; crit.).

[*Orthorhynchus*] *cristatus* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 88, part (St. Vincent).

*Bellona hectoris* MULSANT and VERREAUX, Classif. Troch., 1866, 75.

*Bellona superba* BOUCARD, The Hum. Bird, i, June 1, 1891, 43 (St. Vincent; coll. A. Boucard); Gen. Hum. Birds, 1892, 53 (St. Vincent).

## ORTHORHYNCHUS CRISTATUS CRISTATUS (Linnæus).

### BLUE-CRESTED HUMMING BIRD.

*Adult male*.—Forehead and crown brilliant metallic green, changing (according to inclination of light) from pure emerald green to golden green; occipital crest (abruptly) rich metallic violet; hindneck and sides of head behind eyes dark and rather dull metallic bluish green; back, scapulars, wing-coverts, rump, and upper tail-coverts rather dark metallic grass green; tail black, glossed with purplish bronze; remiges dusky, faintly glossed with purplish; loreal, suborbital, and auricular regions and under parts sooty blackish, fading into sooty gray on chin and throat; femoral tufts pale grayish or whitish; bill dull black; iris dark brown; feet grayish brown or dusky; length

<sup>a</sup> One specimen.

<sup>b</sup> A specimen in the Bangs collection said to be from Martinique is typical of this form, and some specimens from Santa Lucia approach it more or less.

(skins), 77-82 (80); wing, 45.5-51.5 (48.4); tail, 27-30.5 (28.8); exposed culmen, 9-11 (9.6).<sup>a</sup>

*Adult female*.—Above metallic green, bronze-green, or bronze, including middle rectrices, the latter becoming dusky terminally; remaining rectrices black, faintly glossed with purplish, the three outer pairs broadly tipped with pale gray, and with basal portion dull grayish glossed with bronze-green or greenish bronze, the pair next to middle pair similar but without gray tip and with basal portion more extensively greenish or bronzy; remiges dusky, faintly glossed with purplish; under parts pale gray, slightly darker laterally, especially on sides of neck, the chin and median portion of throat sometimes inclining to dull whitish; bill, etc., as in adult male; length (skins), 80-83 (81); wing, 45-48.5 (46.6); tail, 28-31.5 (29.3); exposed culmen, 9.5-12 (10.9).<sup>b</sup>

*Immature male*.—Similar to the adult male, but without crest, the pileum dark and rather dull metallic bluish green.

Island of Barbádos, Lesser Antilles.

[*Trochilus*] *cristatus* LINNÆUS, Syst. Nat., ed. 10, i, 1758, 121 (based on *Crested Humming Bird*, *Avis mellivora*, *minor*, *cristata* Edwards, Nat. Hist., i, pl. 37); ed. 12, i, 1766, 192.—GMELIN, Syst. Nat., i, pt. 1, 1788, 498.—LATHAM, Index Orn., i, 1790, 317.

*Trochilus cristatus* AUDEBERT and VIEILLOT, Ois. Dorés, i, 1801, 91-93, pls. 47, 48, part.—TEMMINCK, Cat. Syst., 1807, 83.—VIEILLOT, Nouv. Dict. d'Hist. Nat., vii, 1817, 365, pl. B. 19, fig. 3, part?—SCHOMBURGK, Hist. Barbados, 1848, 681.

*T[rochilus] cristatus* SWAINSON, Birds Brazil, etc., pt. 2 (1834-35?), pl. 21.

*Ornismya cristata* LESSON, Hist. Nat. Ois.-Mouch., 1829, pp. xxxix, 113, pls. 31, 32; Les Trochilidées, 1831, 20, pl. 4 ("Santo Domingo"); Traité d'Orn., 1831, 285; Index Gen. et Synop. Troch., 1832, p. xxx, part ("Trinidad")?

*M[ellisuga] cristata* GRAY, Gen. Birds, i, Dec., 1848, 113.

[*Orthorhynchus*] *cristatus* BONAPARTE, Cousp. Av., i, 1850, 83.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 88, part (Barbados).

*Orthorhynchus cristatus* REICHENBACH, Aufz. der Colibr., 1854, 11; Troch. Enum., 1855, 9, pl. 807, figs. 4876, 4877.—GOULD, Mon. Troch., pt. xiii, May, 1857; vol. iv, 1861, pl. 205; Introd. Troch., oct. ed., 1861, 116.—PELZELN, Orn. Bras., iv, Abth., 1870, 408 ("Brazil" on authority of Swainson).—ELLIOT, Ibis, 1872, 355, part (Barbados; synonymy; crit.).—SALVIN, Ibis, 1873, 334, in text (Barbados).—SCLATER, Proc. Zool. Soc. Lond., 1874, 175 (Barbados).—FEILDEN, Ibis, 1889, 487 (Barbados; habits; descr. nest and eggs).

*O[rthorhynchus] cristatus* CABANIS and HEINE, Mus. Hein., iii, 1860, 61 (Barbados).

*Orthorhynchus cristatus cristatus* OBERHOLSER, Smithson. Misc. Coll., xlviii, May 13, 1905, 60.

*Bellona cristata* MULSANT and VERREAUX, Classif. Troch., 1866, 75; Hist. Nat. Ois.-Mouch., iii, 1876, 193, part (Barbados), pl. 89; Suppl., pl. 21.—ELLIOT, Classif. and Synop. Troch., 1879, 178, part (Barbados).—CORY, Auk, iii, 1886, 356, part (Barbados); vi, 1889, 218, part (Barbados); Ibis, 1886, 472 (Barbados); Birds West Ind., 1889, 151, part (Barbados); Cat. West Ind. Birds, 1892, 13, 107, 144, part (Barbados).—SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 353, part (Barbados).—BOUCARD, Gen. Hum. Birds, ii, 1892, 52, part (Barbados).

<sup>a</sup> Ten specimens.

<sup>b</sup> Six specimens.



- [*Bellona*] *cristata* MULSANT, Ann. Soc. Linn. Lyon, n. s., xxii, 1876, 222, part (Barbádos).—SHARPE, Hand-list, ii, 1900, 142, part (Barbádos).  
 [*Trochilus*] *puniceus* GMELIN, Syst. Nat., i, pt. 1, 1788, 497 (based on *Crested Brown Humming-bird* Latham, Synopsis, i, pt. 2, 784).  
 [*Trochilus*] *pileatus* LATHAM, Index Orn., i, 1790, 318 (new name for *T. puniceus* Gmelin).  
*Trochilus pileatus* VIEILLOT, Nouv. Dict. d'Hist. Nat., vii, 1817, 365 (cites Ois. Dorés, pl. 63, fig. 1).  
*T[rochilus] pileatus* VIEILLOT, Tabl. Enc. Méth., ii, 1822, 566.  
*Orthorhynchus exilis* (not *Trochilus exilis* Gmelin) SCLATER, Proc. Zool. Soc. Lond., 1874, 175 (Barbádos).  
*B[ellona] cristata (typica)* HARTERT, Das Tierreich, Troch., 1900, 213.  
*Bellona cristatus emigrans* (not *Orthorhynchus emigrans* Lawrence) CLARK (A. H.), Auk, xxii, April, 1905, 216 (Barbádos).  
*Bellona cristata emigrans* CLARK (A. H.), Proc. Bost. Soc. N. H., xxxii, 1905, 276 (Barbádos; descr. nest and eggs).

### ORTHORHYNCHUS CRISTATUS EMIGRANS (Lawrence).

#### GRENADA BLUE-CREST.

Similar to *O. c. cristatus*, but adult male with crest averaging more bluish violet and throat paler gray; adult female with under parts decidedly paler (grayish white instead of light gray).

*Adult male*.—Length (skins), 75–93 (82); wing, 47.5–51 (49.1); tail, 26.5–30.5 (29.1); exposed culmen, 9.5–11 (10.4).<sup>a</sup>

*Adult female*.—Length (skins), 77–83 (81); wing, 43–47 (45.2); tail, 27–29.5 (27.7); exposed culmen, 12–13.5 (12.7).<sup>b</sup>

Islands of Grenada, Unión, Carriacou, and Mustique, Lesser Antilles.

*Orthorhynchus emigrans* LAWRENCE, Ann. N. Y. Ac. Sci., i, 1878, 50 ("Venezuela," i. e., Grenada?; coll. G. N. Lawrence).

*Orthorhynchus cristatus emigrans* OBERHOLSER, Smithson. Misc. Coll., xlviii, May 13, 1905, 60.

*Bellona emigrans* BOUCARD, Gen. Hum. Birds, sig. i, July, 1892, 54 (Venezuela?; Grenada; crit.).

*Orthorhynchus cristatus* (not *Trochilus cristatus* Linnæus) LAWRENCE, Proc. U. S. Nat. Mus., i, 1878, 272, 487 (Grenada).

<sup>a</sup> Twenty specimens.

<sup>b</sup> Ten specimens, from Grenada.

| Locality.                                                   | Wing. | Tail. | Ex-<br>posed<br>culmen. |
|-------------------------------------------------------------|-------|-------|-------------------------|
| MALES.                                                      |       |       |                         |
| Ten adult males from Grenada.....                           | 49.1  | 29.3  | 10.5                    |
| Three adult males from "Venezuela" (probably Grenada!)..... | 49    | 29.8  | 10.7                    |
| One adult male from Union Island.....                       | 49    | 29    | 10.5                    |
| One adult male from Carriacou.....                          | 48    | 28    | 10.5                    |

- Bellona cristata* ELLIOT, *Classif. and Synop. Troch.*, 1879, 178, part (Grenada).—CORY, *Auk*, vi, 1889, 218, part (Grenada); *Cat. West Ind. Birds*, 1892, 13, 107, 144, part (Grenada).—SALVIN, *Cat. Birds Brit. Mus.*, xvi, 1892, 353, part (Grenada; Mustique; Venezuela?).—BOUCARD, *Gen. Hum. Birds*, ii, 1892, 54 (Venezuela?; Grenada).—LODGE, *Ibis*, 1896, 518 (Grenada; habits; notes).—WELLS, *Auk*, xix, 1902, 345 (Carriacou; habits; descr. nest).—NICOLL, *Ibis*, 1904, 566 (Grenada, up to 2,000 ft.).
- [*Bellona*] *cristata* SHARPE, *Hand-list*, ii, 1900, 142, part (Grenada; Grenadines).
- Bellona cristatus cristatus* CLARK (A. H.), *Auk*, xxii, April, 1905, 216 (Grenada; Grenadines).
- Bellona cristata cristata* CLARK (A. H.), *Proc. Bost. Soc. N. H.*, xxxii, 1905, 275 (Grenada; Grenadines; habits; descr. nest and eggs).
- Orthorhynchus exilis* (not *Trochilus exilis* Gmelin) WELLS, *Proc. U. S. Nat. Mus.*, ix, 1887, 620 (Grenada; habits; descr. nest and eggs).

### Genus CHRYSOLAMPIS Boie.

*Chrysolampis* BOIE, *Isis*, 1831, 546. (Type, *Trochilus mosquitus* Linnæus.)

Rather small Trochilidæ (length about 85–98 mm.) with dense frontal feathering covering basal third (approximately) of maxilla, entirely concealing nostrils, exposed culmen much shorter than head, tail more than half as long as wing, broad, and rounded, the adult male with pileum brilliant metallic ruby red, chin, throat and chest brilliant metallic golden orange, and tail bright rufous.

Bill straight, nearly terete, about as long as head or slightly longer, but unfeathered portion of maxilla decidedly shorter, the basal third, more or less, being completely covered by the dense frontal feathering, which entirely conceals nostrils; culmen rounded anteriorly, narrowly ridged posteriorly; terminal portion of maxillary tomium very minutely serrate; mandible with a distinct narrow longitudinal median lateral groove. Tarsus naked; middle and outer toes about equal in length, the inner decidedly shorter, the hallux about as long as inner toe. Wing more than four times as long as exposed culmen, the outermost primary longest. Tail more than half as long as wing, rounded, the rectrices broad, rounded at tip.

*Coloration*.—Adult male with pileum very brilliant metallic ruby red, chin and throat brilliant metallic golden orange, and tail rufous, with rectrices margined terminally with dark bronzy brown; adult female dull metallic bronze-greenish above, pale gray or dull grayish white below, the tail grayish, glossed with greenish bronze basally, dusky subterminally or terminally, the lateral rectrices broadly tipped with white.

*Range*.—Eastern and central Colombia, to Cayenne, and south-eastern Brazil; Caribbean Islands of Trinidad, Tobago, Curaçao, Bonaire, Aruba, etc.; southwestern Costa Rica? (Monotypic.)

## CHRY SOLAMPIS MOSQUITUS (Linnæus).

## RUBY-AND-TOPAZ HUMMING BIRD.

*Adult male*.—Entire pileum, from frontal antiæ to occiput, inclusive, intense metallic red (rose red to carmine); chin, throat, and chest bright metallic orange or golden; hindneck, sides of neck, and extreme upper back velvety black, passing into dark bronzy olive on lower back, rump, upper tail-coverts, scapulars, and wing-coverts; tail clear chestnut-rufous, faintly glossed with purplish, the rectrices margined terminally with dark bronzy olive; remiges dusky, faintly glossed with violaceous; under parts of body plain grayish brown or sepia, the femoral tufts white; under tail-coverts cinnamon-rufous; bill dull black; iris dark brown; feet dusky; length (skins), 85–98 (87); wing, 52–58 (53.2); tail, 30.5–36 (31.4); exposed culmen, 9.5–13 (11).<sup>a</sup>

*Adult female*.—Above metallic bronze-green or greenish bronze, more decidedly bronzy (often coppery bronze) on hindneck and upper back, passing into dull grayish brown on forehead; middle pair (sometimes two middle pairs)<sup>b</sup> of rectrices bronze-green or greenish bronze, usually more dusky at extreme tip; remaining rectrices chestnut-rufous basally, blackish subterminally (more or less broadly), and tipped with a large triangular spot of white—the outermost rec-

<sup>a</sup> Thirty-one specimens.

<sup>b</sup> Occasionally specimens agreeing in every other respect as regards coloration have the middle rectrices (like the others) chestnut-rufous broadly tipped with dusky and dark metallic green.

| Locality.                                                                   | Wing. | Tail. | Ex-<br>posed<br>culmen. |
|-----------------------------------------------------------------------------|-------|-------|-------------------------|
| MALES.                                                                      |       |       |                         |
| Ten adult males from central Colombia (Bogotá).....                         | 55.2  | 32.5  | 10.7                    |
| Four adult males from north coast Colombia (Cartagena and Santa Marta)..... | 53.5  | 31.5  | 12                      |
| Five adult males from Venezuela.....                                        | 54    | 31.7  | 11.9                    |
| Three adult males from Trinidad.....                                        | 56.8  | 33    | 11.3                    |
| Two adult males from Tobago.....                                            | 56.1  | 34.2  | 11.5                    |
| Two adult males from Curaçao.....                                           | 54.5  | 34.2  | 11                      |
| One adult male from British Guiana.....                                     | 56.5  | 32    | 11                      |
| One adult male from Cayenne.....                                            | 55.5  | 32.5  | 11.5                    |
| Four adult males from Brazil.....                                           | 55    | 33    | 11.5                    |
| FEMALES.                                                                    |       |       |                         |
| One adult female from central Colombia (Bogotá).....                        | 54    | 30    | 15.5                    |
| Four adult females from northern Colombia.....                              | 52    | 30.2  | 14.4                    |
| Three adult females from Venezuela.....                                     | 53.7  | 29.5  | 15.2                    |
| Two adult females from Trinidad.....                                        | 54.7  | 30.8  | 14.5                    |
| Two adult females from Tobago.....                                          | 56.7  | 34.2  | 15.5                    |
| One adult female from Surinam.....                                          | 52.5  | 31    | 13.5                    |
| One adult female from Cayenne.....                                          | 53.5  | 30.5  | 13                      |
| One adult female from Brazil.....                                           | 52.5  | 31    | 17                      |



trix sometimes (in younger birds?) with light gray replacing chestnut-rufous, except on part of inner web; remiges dusky, faintly glossed with violaceous; under parts pale brownish gray laterally, whitish medially, the throat usually with a darker median stripe, often intermixed with metallic orange or golden feathers; bill, etc., as in adult males; length (skins), 84-96 (92); wing, 51-58 (53.7); tail, 29-35 (30.9); exposed culmen, 13-17 (14.8).<sup>a</sup>

*Immature*.—Similar to the adult female, as described above, but without any rufous on tail, the basal half, or more, of rectrices (except middle pair) being brownish gray, faintly glossed with greenish or bronzy, the shaft of that portion being whitish. Immature males to be distinguished by a greater or less number of scattered metallic red feathers on pileum and a median stripe of metallic orange or golden on throat or throat and chest.

*Young*.—General color of upper parts cinnamon-rufous, this uniform on rump, but broken elsewhere by exposed dusky basal portion of feathers, the hindneck glossed with metallic bronze; otherwise like the immature stage, described above, but under parts of body and under tail-coverts suffused with pale cinnamon-rufous and whitish tips to outer rectrices tinged with the same.

Northern and eastern South America, from Colombia (Bogotá; Bonda, Santa Marta; Rio Lima; Rio Cauquita; Cauca; Ocaña; Cartagena; Bucaramanga), through Venezuela (Ciudad Bolívar; Carácas; Conejos; Cucurutí; Guaria; Cariaco; Cáura; Caicará; mouth of Rio Meta; La Prición), islands of Margarita, Blanquilla, Los Testigos, Bonaire, Aruba, Curaçao, Tobago, and Trinidad, British Guiana (Georgetown, Demerara; Annai River), Cayenne (Sinnamary), to Brazil (Macuca; Pernambuco; Pará; Bahia; Rio de Janeiro; Serra dos Organos; Minas Geraez; Goiaz; Porto Real); southwestern Costa Rica (San Pedro).

[*Trochilus*] *mosquitus* LINNÆUS, Syst. Nat., ed. 10, i, 1758, 120 ("Indiis"); ed. 12, i, 1766, 192 ("America").—GRAY, Hand-list, i, 1869, 147, no. 1900.

[*Trochilus*] *moschitus* GMELIN, Syst. Nat., i, pt. 1, 1788, 494.—LATHAM, Index Orn., i, 1790, 316.

*Trochilus moschitus* AUDEBERT and VIEILLOT, Ois. Dorés, i, 1801, 62, pl. 29 (Brazil; Guiana).—TEMMINCK, Cat. Syst., 1807, 82.—VIEILLOT, Nouv. Dict. d'Hist. Nat., vii, 1817, 372, pl. 13, 19, fig. 2 (Cayenne; Brazil).—JARDINE, Ann. and Mag. N. H., xx, 1847, 373 (Tobago).—CABANIS, in Schomburgk's Reis. Brit. Guiana, iii, 1848, 705.

[*Trochilus*] *moschitus* LICHTENSTEIN, Verz. Doubl., 1823, 14 (Brazil).—SWAINSON, Birds Brazil, Mex., etc., [1841?], pl. 30.

*Ornismya moschita* LESSON, Hist. Nat. Ois.-Mouch., 1829, pp. xxviii, 166, pls. 52-54 (Guiana); Les Trochilidées, 1831, 55, pl. 15; Index Gen. et Synop. Troch., 1832, p. xxxvi.

*Mellisuga moschita* STEPHENS, in Shaw's Gen. Zool., xiv, 1826, 253.—LÉOTAUD, Ois. Trinidad, 1866, 145.

<sup>a</sup> Fifteen specimens.

*M[ellisuga] moschita* GRAY, Gen. Birds, i, 1848, 113.

*Chrysolampis moschitus* BOIE, Isis, 1831, 546.—DES MURS, in Casteln. Voy., Ois., 1855, 40 (Serra dos Organos near Paraíba; Province Minas Geraez; Province Goiaz; Bahia; Guiana).—GOULD, Mon. Troch., pt. xii, 1856; vol. iv, 1861, pl. 204; Introd. Troch., oct. ed., 1861, 115.—BURMEISTER, Syst. Ueb. Th. Bras., ii, 1856, 332.—HARTLAUB, Journ. für Orn., 1857, 44.—CASSIN, Proc. Ac. Nat. Sci. Phila., 1860, 194 (Cartagena).—SCLATER, Cat. Am. Birds, 1862, 303 (Venezuela).—TAYLOR, Ibis, 1864, 92 (Trinidad).—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1868, 629 (Caracas, Venezuela); 1870, 782 (Mérida, Venezuela).—REINHARDT, Vid. Medd. Nat. For. Kjöb., 1870, 104.—FINSCH, Proc. Zool. Soc. Lond., 1870, 562 (Trinidad).—FORBES, Ibis, 1871, 348 (Macuca, n. e. Brazil); 1881, 348 (Garanhúns, n. e. Brazil).—MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., ii, livr. 4, 1876, 254; iv, livr. 3, 1878, 210 (synonymy).—ELLIOT, Classif. and Synop. Troch., 1879, 176.—SALVIN, Cat. Strickland Coll., 1881, 365 (Brazil; Trinidad); Ibis, 1885, 434 (Brit. Guiana); Cat. Birds Brit. Mus., xvi, 1892, 113.—BOUCARD, The Hum. Bird, i, no. 4, 1891, 26 (descr. aberrant males); ii, 1892, 74 (Bogotá, Colombia); Gen. Hum. Birds, 1895, 55, 56 *bis* (monogr.).—BOUCARD and BERLEPSCH, The Hum. Bird, ii, 1892, 45 (Porto Real, Brazil).—ALLEN, Bull. Am. Mus. N. H., iv, 1892, 55 (Carúpano, Venezuela); xiii, 1900, 140 (Bonda, Santa Marta, Colombia).—LODGE, Ibis, 1896, 514 (Tobago; habits).—LOAT, Ibis, 1898, 565 (Brit. Guiana).—ROBINSON and RICHMOND, Proc. U. S. Nat. Mus., xxiv, 1901, 172 (Cucuruti, Venezuela).—NICOLL, Ibis, 1904, 40 (Bahia).—MENEGAUX, Bull. Mus. d'Hist. Nat. Paris, 1904, 113 (Sinnamary, French Guiana).—LOWE, Ibis, 1907, 118 (Blanquilla I.); 1909, 317 (Los Testigos I.).

[*Chrysolampis*] *moschitus* BONAPARTE, Consp. Av., i, 1850, 82; Rev. et Mag. de Zool., 1854, 256.—MULSANT, Ann. Soc. Linn. Lyon, xxii, 1876, 214.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 87.

*C[hrysolampis] moschita* CABANIS and HEINE, Mus. Hein., iii, 1860, 21 (Guiana).—HEINE, Journ. für Orn., 1863, 179.

*Chrysolampis moschita* PELZELN, Orn. Bras., i. Abth., 1868, 32; iv. Abth., 1870, 408.—WYATT, Ibis, 1871, 378 (Ocaña, Colombia).

*Chrysolampis mosquita* MULSANT and VERREAUX, Classif. Troch., 1866, 57.

*Chrysolampis mosquitus* REICHENBACH, Aufz. der Colibr., 1854, 9; Troch. Enum., 1855, 5, pl. 753, figs. 4646–4649.—MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., iv, livr. 2, 1877, pl. 55.—BERLEPSCH, Journ. für Orn., 1884, 310 (Bucaramanga, Colombia; crit.); 1887, 319 (Bogotá; synonymy); 1892, 86 (Curaçao; crit.); Zeitschr. Orn., 1887, 186 (Bogotá).—PETERS, Journ. für Orn., 1892, 119 (Curaçao; habits).—HARTERT, Ibis, 1893, 299 (Aruba; crit. as to plumages of female and young), 319 (Curaçao; habits), 328 (Bonaire); Novit. Zool., ix, 1902, 301 (Aruba; Curaçao; Bonaire).—CHAPMAN, Bull. Am. Mus. N. H., vi, 1894, 57 (Trinidad).—DALMAS, Soc. Zool. France, xiii, 1900, 141 (Tobago).—SIMON, Ornith., xi, 1901, 215 (Trinidad; Guaria, Cariaco, and Caura, Venezuela).—BERLEPSCH and HARTERT, Novit. Zool., ix, 1902, 87 (Caicarí, mouth of Rio Meta, Ciudad Bolívar, and La Prición, Venezuela).—CHERRIE, Bull. Brooklyn Inst. Arts and Sci., 1906, 6 (Aripo, Trinidad).—LOWE, Ibis, 1907, 559 (Margarita I.; Blanquilla I.).—CORY, Pub. 137, Field Mus. N. H., 1909, 200 (Aruba), 206 (Curaçao), 212 (Bonaire), 221 (Tortuga), 224 (Blanquilla), 245 (Margarita).

*C[hrysolampis] mosquitus* HARTERT, Das Tierreich, Troch., 1900, 101.

[*Chrysolampis*] *mosquitus* SHARPE, Hand-list, ii, 1900, 119.

*Chrysolampis moschatus* STONE, Proc. Ac. Nat. Sci. Phila., 1899, 312 (near Cartagena, Colombia).

(?) [*Trochilus*] *pegasus* LINNÆUS, Syst. Nat., ed. 12, i, 1766, 192 (Cayenne; based on *Mellisuga cayanensis*, ventre griseo Brisson, Orn., iii, 709, pl. 36, fig. 4).—GMELIN, Syst. Nat., i, pt. 1, 1788, 495.—LATHAM, Index Orn., i, 1790, 315.

- [*Trochilus*] *elatus* LINNÆUS, Syst. Nat., ed. 12, i, 1766, 192 ("India orientali;" based on *Mellivora cristata rubra* Edwards, Nat. Hist., Birds, pl. 344, upper fig.).—GMELIN, Syst. Nat., i, pt. 1, 1788, 499.—LATHAM, Index Orn., i, 1790, 316.
- Chrysolampis elatus* BERLEPSCH, Novit. Zool., xv, Nov., 1908, 264 (Cayenne).
- [*Trochilus*] *carbunculus* GMELIN, Syst. Nat., i, pt. 1, 1788, 498 (Cayenne; based on *Escarboucle* Buff. Hist. Nat. Ois., vi, 28; *Carbuncle Humming-bird* Latham, Synop., i, pt. 2, 782).—LATHAM, Index Orn., i, 1790, 317.
- Trochilus carbunculus* VIEILLOT, Nouv. Dict. d'Hist. Nat., vii, 1817, 361 (cites Ois. Dorés, pl. 5).
- [*Chrysolampis*] *carbunculus* REICHENBACH, Aufz. der Colibr., 1854, 9; Troch. Enum., 1855, 5.
- (?) [*Trochilus*] *guyanensis* GMELIN, Syst. Nat., i, pt. 1, 1788, 498 (based on *Small Green and Crimson Humming-bird* Bancroft, Guiana, p. 168; *Guiana Humming-bird* Latham, Synopsis, ii, 781).
- (?) [*Trochilus*] *guianensis* LATHAM, Index Orn., i, 1790, 317.
- Trochilus guianensis* VIEILLOT, Nouv. Dict. d'Hist. Nat., vii, 1817, 375.
- (?) [*Trochilus*] *hypophæus* LATHAM, Index Orn., i, 1790, 314 (new name for *Trochilus striatus* Gmelin, based on *Brown-crowned Humming-bird* Latham, Synopsis, ii, 776).
- (?) *Trochilus hypophæus* SHAW, Gen. Zool., viii, pt. 1, 1811, 333.
- (?) [*Chrysolampis*] *reichenbachii* CABANIS and HEINE, Mus. Hein., iii, Feb., 1860, 21 (Colombia).
- (?) [*Chrysolampis*] *reichenbachii* HEINE and REICHENOW, Nom. Mus. Hein. Orn., 1890, 176.
- (?) *Chr[ysolampis] infumatus* BERLEPSCH, Zeitschr. Orn., iv, 1888, 182, in text (Bogotá, Colombia; coll. Count von Berlepsch?; =color variety or melanism?).
- (?) *Chrysolampis infumatus* BOUCARD, Gen. Hum. Birds, 1895, 55, 57, in text (crit.).

## Genus LOPHORNIS Lesson.

- Lophornis* LESSON, Hist. Nat. Ois.-Mouch., 1829, p. xxxvii; Index Gén. et Synop. Troch., 1832, p. xli. (Type, *Trochilus ornatus* Boddaert.)
- Bellatrix* BOIE, Isis, 1831, 545. (Type, *Trochilus ornatus* Boddaert.)
- Lophorhinus* (not *Lophorhina* Vieillot, 1816) BONAPARTE, Rev. et Mag. de Zool., 1854, 257. (Type, *Ornismya (Lophorinus) delattrei* Lesson.)
- Lophomyia* FITZINGER, Sitzungsab. Ak. Wissensch. Wien, xlvi, pt. 1, 1862?, 235. (Type, *Trochilus magnificus* Vieillot.)
- Telamon* MULSANT and VERREAUX, Mém. Soc. Imp. Sci. Nat. Cherb., xii (sér. 2, ii), 1866, 219 (Classif. Troch., 1866, 75). (Type, *Ornismya (Lophorinus) delattrei* Lesson.)
- Paphosia* MULSANT and VERREAUX, Mém. Soc. Imp. Sci. Nat. Cherb., xii (sér. 2, ii), 1866, 219 (Classif. Troch., 1866, 75). (Type, *Ornismya helenæ* Delattre.)
- Paphiosa* (emendation?) MULSANT, Ann. Soc. Linn. Lyon, n. s., xxii, 1876, 222.
- Dialia* MULSANT, Ann. Soc. Linn. Lyon, n. s., xxii, 1876, 223 (Cat. Ois.-Mouch., p. 27). (Type, *Lophornis adorabilis* Salvin.)
- Idas* MULSANT, Ann. Soc. Linn. Lyon, n. s., xxii, 1876, 223 (Cat. Ois. Mouch., p. 27). (Type, *Trochilus magnificus* Vieillot.)

Small Trochilidæ (length about 65–80 mm.) with nasal operculum very narrow, almost rudimentary, mandibular groove indistinct, a more or less distinct whitish or buffy bar across rump, naked tarsi, tail double-rounded or rounded, with rectrices broadly rounded at tip (three-fifths to about two-thirds as long as wing), the adult males with



conspicuous crest or neck-tufts or ruffs (sometimes both), and with outer web of ninth primary abruptly narrowed (almost obliterated) terminally.

Bill shorter than head, stout, nearly terete (broad and depressed basally in *L. adorabilis*); culmen rounded terminally, narrowly ridged (for a greater or less distance) basally; tomia smooth; mandible with the usual lateral median groove or sulcus indistinct or obsolete. Nasal operculum narrow, almost rudimentary, hidden by appressed frontal feathering, which anteriorly extends nearly to (sometimes considerably beyond) anterior end of nostrils, forming a single broadly rounded or very faintly emarginate antia on base of culmen. Tarsus naked; lateral toes about equal in length, slightly but distinctly shorter than middle toe. Wing more than three to about four times as long as exposed culmen, the outermost (tenth) primary longest or equal to ninth, narrow but not acuminate, the ninth primary in adult males with outer web abruptly excised or narrowed (almost obliterated) for about terminal third or fourth. Tail in adult male about three-fifths to a little more than two-thirds as long as wing, double-rounded, the outermost rectrices sometimes longer, sometimes shorter, than middle pair—in females and young about half as long as wing, rounded, the rectrices broadly rounded at tip in both sexes.

*Coloration*.—Back, etc., metallic green, bronze-green, or bronze; a more or less distinct bar of white or buffy across rump. Adult males extremely variable in coloration of head, neck, and under parts but always with the chin and throat brilliant metallic green; the head often conspicuously crested, and frequently with a conspicuous tuft of elongated, usually spangled or otherwise brilliantly colored feathers springing from the auricular region; adult females without crest or tufts, the chin and throat whitish or buffy, sometimes spotted or flecked with dusky or bronzy.

*Range*.—Southern Mexico to Cayenne, southern Brazil, Bolivia, and Peru. (About ten species.)

#### KEY TO THE SPECIES OF LOPHORNIS.

- a. Head conspicuously crested or tufted; rectrices (except middle pair) wholly cinnamon-rufous or merely edged with dusky. (*Adult males*.)
- b. No elongated auricular tuft, nor white patch on crown; forehead not coppery; no distinct white patch on chest.
- c. Whole pileum, including bushy crest, cinnamon-rufous; whole throat metallic green; under parts of body not spotted. (Central Costa Rica to northern Colombia.).....*Lophornis delattrei*, adult male (p. 671).
- cc. Pileum dark metallic green, the slender crest blackish; lower throat velvety black; under parts of body spotted with bronze on a white ground. (Southeastern Mexico to Costa Rica.)

*Lophornis helenæ*, adult male (p. 673).

- bb.* An auricular tuft of elongated acicular (dark metallic green) feathers; a white patch on crown and a large white patch on chest; forehead coppery. (Costa Rica and western Panama.).....*Lophornis adorabilis*, adult male (p. 675).
- aa.* Head without crest or tufts; rectrices crossed by a broad band of black. (*Adult females and immature males.*)
- b.* Forehead light cinnamon-rufous or cinnamon-buff.  
*Lophornis delattrei*, adult female and immature male (pp. 671, 672).
- bb.* Forehead dusky or dark metallic greenish.
- c.* Under parts of body whitish spotted with bronze; throat buffy or pale cinnamonaceous.....*Lophornis helenæ*, adult female and immature male (p. 673).
- cc.* Under parts of body uniform cinnamon-rufous; throat white.  
*Lophornis adorabilis*, adult female and immature male (pp. 675, 676).

### LOPHORNIS DELATTREI (Lesson).

#### DE LATTRÉ'S COQUETTE.

*Adult male.*—Pileum, including very conspicuous crest of much elongated, acicular, rather rigid, feathers, uniform cinnamon-rufous; nape, hindneck, back, scapulars, and lesser wing-coverts metallic bronze-green; a band of white, pale buff, or cinnamon-buff across upper rump; lower rump and upper tail-coverts dark purplish bronze; middle pair of rectrices with edges and terminal portion (more or less extensively) dark bronzy, the basal-median portion deep cinnamon-rufous; rest of tail deep cinnamon-rufous, the outer webs of rectrices edged with dusky bronze; remiges dull purplish black or dusky glossed with violet-purple; loreal, auricular, and malar regions, chin, and throat brilliant metallic yellowish emerald green, the feathers abruptly cinnamon-buff basally (this slightly exposed on latero-posterior portion of throat); beneath the posterior margin of the greenular area a few narrow feathers, white terminally, pale cinnamon-buff basally; under parts of body rather dull metallic bronze-green or greenish bronze, more or less broken or intermixed with light rusty brownish; under tail-coverts bright cinnamon-rufous; bill pale brownish (in dried skins), dusky terminally; iris dark brown; feet grayish brown (in dried skins); length (skins), 66–68 (67); wing, 35–38.5 (36.8); tail, 22–22.5 (22.2); exposed culmen, 8.5–10 (9.1).<sup>a</sup>

*Adult female.*—Forehead and anterior portion (sometimes greater part) of crown dull cinnamon-rufous or russet; rest of pileum, hindneck, back, scapulars, and wing-coverts metallic bronze or bronze-green, usually darker on occiput and posterior portion of crown; a band of cinnamon-buff or whitish across upper rump; lower rump and upper tail-coverts dusky purplish bronze or dull copper-bronze; middle pair of rectrices pale cinnamon-rufous basally, middle portion greenish bronze, terminal portion (broadly) purplish bronzy black (sometimes with a small chestnut or cinnamon-rufous apical spot); remaining rectrices broadly tipped with cinnamon-rufous and crossed by a broad subterminal band of black, the basal portion cinnamon-

<sup>a</sup> Five specimens.

rufous; remiges purplish dusky or dull purplish black; chin and throat cinnamon-rufous or cinnamon-whitish, the lower portion of the latter spotted or flecked with dusky, these spots coalescing posteriorly into a transverse patch of dusky purplish bronzy on extreme lower throat; under parts of body brownish gray, glossed with metallic bronze, especially on sides; under tail-coverts clear cinnamon-rufous to pale cinnamon; bill as in adult male, but more extensively dusky terminally; iris and feet as in adult male; length (skins), 65-70 (67); wing, 38-39 (38.5); tail, 18.5; exposed culmen, 9.5-11 (10.2).<sup>a</sup>

*Young male?*.—Similar to the adult female, but fore part of head, including forehead, lores, chin, and upper throat, light cinnamon-rufous.

*Immature male*.—Similar to the adult female, but chin and throat bright metallic green or else (younger individuals) dull black with green on lower-middle portion and a whitish spot or bar between the bright green of throat and duller green of chest.

Southwestern Costa Rica (San Pedro) through Panamá (Verágua; Castillo; Laguna del Castillo; Chitra; Chepo; Lion Hill; Panamá) to Colombia (Bogotá; Prado, Tolima).

(*O[rnysmia]* *Lophorinus*) *de latrei* LESSON, Rev. Zool., ii, Jan., 1839, 19 (locality unknown).

*M[ellisuga]* *de latrei* GRAY, Gen. Birds, i, Dec., 1848, 113.

*Lophornis delattrei* GOULD, Mon. Troch., pt. xxiv, Sept., 1861; vol. iii, 1861, pl. 121; Introd. Troch., oct. ed., 1861, 84.—LAWRENCE, Ann. Lyc. N. Y., vii, 1862, 465 (Lion Hill, Panamá).—BOUCARD, Gen. Hum. Birds, 1892, 39.

*L[ophornis]* *delattrei* HARTERT, Das Tierreich, Troch., 1900, 218.

*[Lophornis]* *delattrei* SHARPE, Hand-list, ii, 1900, 143.

*Telamon delattrei* MULSANT and VERREAUX, Classif. Troch., 1866, 75; Hist. Nat. Ois.-Mouch., iii, livr. 3, 1876, 199, part (Panamá; Colombia).

*[Telamon]* *delattrei* MULSANT, Ann. Soc. Linn. Lyon, xxii, 1876, 222.

*[Trochilus]* *delattrei* GRAY, Hand-list, i, 1869, 146, no. 1892.

*[Lophornis]* *delattrii* BONAPARTE, Consp. Av., i, 1850, 83; Rev. et Mag. de Zool., 1854, 257.—REICHENBACH, Aufz. der Colibr., 1854, 12; Troch. Enum., 1855, 9.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 83.

*Lophornis delattrii* SCLATER, Proc. Zool. Soc. Lond., 1857, 17 (Bogotá, Colombia).—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1864, 365 (Lion Hill).—SALVIN,

<sup>a</sup> Two specimens.

| Locality.                                                 | Wing. | Tail. | Ex-<br>posed<br>culmen. |
|-----------------------------------------------------------|-------|-------|-------------------------|
| MALES.                                                    |       |       |                         |
| Three adult males from central Colombia (Bogotá).....     | 36.2  | 22    | 8.8                     |
| Two adult males from western Panamá (Verágua).....        | 37.7  | 22.2  | 9.5                     |
| FEMALES.                                                  |       |       |                         |
| One adult female from central Colombia (Bogotá).....      | 38    | 18.5  | 9.5                     |
| One adult female from eastern Panamá (Atlantic side)..... | 39    | 18.5  | 11                      |



Proc. Zool. Soc. Lond., 1870, 207 (Castillo and Laguna del Castillo, Panamá); Cat. Birds Brit. Mus., xvi, 1892, 423, 668 (Castillo, Laguna del Castillo, Chitra, Lion Hill, and Chepo, Panamá; Bogotá and Prado, Tolima, Colombia).—ELLIOT, *Classif. and Synop. Troch.*, 1879, 133, part (Veragua; Panamá; Colombia).—BERLEPSCH, *Journ. für Orn.*, 1887, 329 (Bogotá).—RIDGWAY, *Rep. U. S. Nat. Mus. for 1890 (1891)*, pl. 32, fig. 1.—SALVIN and GODMAN, *Biol. Centr.-Am., Aves*, ii, 1892, 363.—BOUCARD, *The Hum. Bird*, ii, 1892, 73 (Veragua; Panamá, Bogotá).—BANGS, *Proc. New Engl. Zool. Club*, iv, 1908, 25 (San Pedro, s. w. Costa Rica).—CARRIKER, *Ann. Carnegie Mus.*, vi, 1910, 552 (Costa Rica).

### LOPHORNIS HELENÆ (Delattre).

#### PRINCESS HELENA'S COQUETTE.

*Adult male*.—Pileum dark metallic green, the long, acicular, or filamentous feathers of occipital crest greenish black; nape, hindneck, back, scapulars, and wing-coverts metallic bronze-green; lower rump and upper tail-coverts sooty blackish, more or less glossed with bronzy, this separated from the green of upper rump and back by a narrow band of white or light dull buffy, across middle of rump; middle rectrices dull greenish bronze or olive-bronze, passing into dusky terminally and into cinnamon-rufous, more or less extensively, basally; other rectrices cinnamon-rufous, edged on outer web with bronzy blackish; remiges dusky, faintly glossed with violaceous; chin and upper throat brilliant metallic yellowish green abruptly defined, with a convex or semicircular outline, posteriorly against a patch of elongated, velvety black feathers on extreme lower throat; on each side of this shield-like velvety black patch a tuft of elongated feathers, mostly buff (more or less deep) but with upper web of some velvety black, forming sharply defined streaks; chest metallic bronze (varying from greenish to bright golden), the breast, abdomen, sides, and flanks of white spotted with metallic bronze; under tail-coverts cinnamon-rufous, more or less distinctly grayish brown centrally; bill light brownish or whitish (in dried skins), usually dusky terminally; iris dark brown; feet brownish (in dried skins); length (skins), 63–77 (67.5); wing, 38–42.5 (39.8); tail, 22–25.5 (23.7); exposed culmen, 10–12.5 (11.3).<sup>a</sup>

*Adult female*.—Above dark metallic green or bronze-green, brightest on back, etc.; a narrow white band across middle of rump; extreme lower rump and upper tail-coverts black, glossed with bronze; middle rectrices olive-bronzy, blackish terminally, cinnamon-rufous at base, the remaining rectrices cinnamon-rufous crossed by a broad subterminal band of black; remiges dusky, faintly glossed with violaceous; loreal, suborbital, and auricular regions uniform blackish; malar region, chin, and throat varying from pale grayish or brownish buff to deep cinnamon-buff or pale cinnamon-rufous, sometimes minutely flecked with dusky or bronzy; chest nearly uniform metallic bronze,

<sup>a</sup> Twenty-one specimens.

the remaining under parts (except under tail-coverts) white spotted with metallic bronze; under tail-coverts cinnamon-rufous; maxilla dusky, mandible pale brownish basally, dusky terminally; length (skins), 60–71 (65); wing, 37.5–41 (38.9); tail, 18.5–21.5 (20.2); exposed culmen, 11–12.5 (11.3).<sup>a</sup>

Southeastern Mexico, in States of Vera Cruz (Córdoba; Jalapa; Santecomapám; Chiquilmita; Catemaco; Tospám; San Andrés Tuxtla) and Chiapas, southward through Guatemala (Cobán; Chisec; Guatemala City; Chiquilmita, Vera Paz; Petén) and Honduras (San Pedro Sula) to Costa Rica (Turrialba; Tucurríqui; Bonilla; Juan Viñas; Guayabál; Guayabo; El Naranjo; San Pedro; Las Pavas; Cachí; San Carlos).

*Ornismya helenae* DELATRE, Echo du Monde Savant, 1843, 991, in text (Vera Paz, Guatemala); Rev. Zool., 1843, 133.

*M[ellisuga] helenæ* GRAY, Gen. Birds, i, Dec., 1848, 113.

[*Lophornis*] *helenae* BONAPARTE, Consp. Av., i, 1850, 83.—REICHENBACH, Aufz. der Colibr., 1854, 12; Troch. Enum., 1855, 9, pl. 811, fig. 4892.

*Lophornis helenæ* GOULD, Mon. Troch., pt. x, Sept., 1855; vol. iii, 1861, pl. 123; Introd. Troch., oct. ed., 1861, 84.—SCLATER, Proc. Zool. Soc. Lond., 1856, 288 (Córdoba, Vera Cruz); Cat. Am. Birds, 1862, 295 (Cobán, Vera Paz, Guatemala).—SCLATER and SALVIN, Ibis, 1859, 130 (Cobán, Guatemala).—SALVIN, Ibis, 1860, 194, 196, 267 (Cobán; habits); Cat. Birds Brit. Mus., xvi, 1892, 425 (Cobán and Chisec, Guatemala; Turrialba and Tucurrique, Costa Rica).—LAWRENCE, Ann. Lyc. N. Y., ix, 1868, 145 (Costa Rica).—DE OCA, La Naturaleza, iii, 1875, 300 (Chiapas); Troq. de Mex., 1875, 54.—BOUCARD, Notes Troch. du Mex., 1875, 2 (Jalapa, Córdoba, and Chiquilmita, Vera Cruz; habits, etc.); Ann. Soc. Linn. Lyon, xxii, 1876, 15 (Córdoba, Santecomapám, and Catemaco, Vera Cruz); Gen. Hum. Birds, 1892, 34 (Tospám, San Andrés Tuxtla, etc., Vera Cruz).—ZELEDÓN, Cat. Aves de Costa Rica, 1882, 21; Anal. Mus. Nac. Costa Rica, i, 1887, 122.—RIDGWAY, Rep. U. S. Nat. Mus. for 1890 (1891), pl. 30, fig. 1; Condor, vii, 1905, 157, in text (Bonilla, Costa Rica).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 364 (San Pedro Sula, Honduras; El Naranjo, Costa Rica; etc.).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 552 (Caribbean slope Costa Rica, 1,000–4,000 ft.).

[*Lophornis*] *helenæ* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 83.—SHARPE, Hand-list, ii, 1900, 144.

*L[ophornis] helenæ* HARTERT, Das Tierreich, Troch., 1900, 219.

<sup>a</sup> Twelve specimens.

| Locality.                                             | Wing. | Tail. | Ex-<br>posed<br>culmen. |
|-------------------------------------------------------|-------|-------|-------------------------|
| MALES.                                                |       |       |                         |
| Two adult males from Vera Cruz (Córdoba), Mexico..... | 41.2  | 24.2  | 10.2                    |
| Nine adult males from Guatemala.....                  | 39.7  | 23.8  | 11.4                    |
| Ten adult males from Costa Rica.....                  | 39.6  | 23.5  | 11.4                    |
| FEMALES.                                              |       |       |                         |
| Three adult females from Guatemala.....               | 39.5  | 21    | 12.2                    |
| Nine adult females from Costa Rica.....               | 38.7  | 19.9  | 11.7                    |

*Paphosia helenae* MULSANT and VERREAUX, Classif. Trôch., 1866, 75; Hist. Nat. Ois.-Mouch., ii, livr. 2, 1875, pl. 25, fig. 2; iii, livr. 3, 1876, 205, pl. 91, fig. 2 (Mexico; Guatemala; Costa Rica).

*Paphiosia helenæ* BOUCARD, Proc. Zool. Soc. Lond., 1878, 70 (San Carlos and Turrialba, Costa Rica).

[*Paphiosia*] *helenae* MULSANT, Ann. Soc. Linn. Lyon, xxii, 1876, 222.

*Paphiosia helenæ* BOUCARD, Liste Ois. récol. Guat., 1878, 46.

[*Trochilus*] *helenæ* GRAY, Hand-list, i, 1869, 146, no. 1891.

[*Lophornis*] *helenæ* BONAPARTE, Rev. et Mag. de Zool., 1854, 257.

*Lophornis elenæ* DE OCA, La Naturaleza, iii, 1875, pl. (8), fig. 43; Troq. de Mex., 1875, pl. (12), fig. 43.

### LOPHORNIS ADORABILIS Salvin.

#### ADORABLE COQUETTE.

*Adult male*.—Frontal, loreal, and orbital regions metallic copper-bronze, the feathers pure white beneath surface; a cuneate crest of pure white, elongated, narrowly pointed feathers springing from posterior portion of forehead and center of crown; sides of crown, occiput, hindneck, back, scapulars, and wing-coverts rather dark bronze-green; rump and shorter upper tail-coverts dark metallic coppery purple, this area separated from green of back by a narrow band of white, pale cinnamon, or buffy across upper rump; longer upper tail-coverts pale grayish cinnamon or dull brownish buffy broadly tipped with dusky purplish bronze; tail chestnut-rufous, the outer webs of rectrices edged with dusky bronze or bronze-green, the middle pair broadly tipped with the same; remiges and primary coverts dull black, the secondaries and inner primaries more purplish dusky; chin and throat bright metallic emerald green, this color extending over the auricular region, from the posterior portion of which there springs a much elongated tuft of very long narrowly lanceolate or acicular—almost filamentous—plumes of metallic green; chest white, tinged with cinnamon or buffy grayish laterally and posteriorly; rest of under parts cinnamon-rufous, passing into metallic bronze-green on sides of breast; bill pale brownish (coral red in life) the terminal third (more or less) dusky; feet dusky grayish brown (in dried skins); length (skins), 71–80 (74); wing, 36.5–40.5 (39); tail, 25.5–29 (27.3); exposed culmen, 10.5–12 (11.1).<sup>a</sup>

*Adult female*.—Forehead, and crown, together with loreal, suborbital, and auricular regions, dark sooty, faintly glossed with bronze; occiput, nape, hindneck, back, scapulars, and wing-coverts metallic bronze-green; a broad band of cinnamon-buff (more or less deep) or buffy white across middle of rump; upper tail-coverts dark sooty or sooty black, strongly glossed with bronze or coppery bronze; middle rectrices pale cinnamon-rufous basally, bronze-green in middle portion, black (broadly) subterminally or terminally, usually tipped with light cinnamon-rufous; lateral rectrices similar but broadly tipped with light cinnamon-rufous, and bronze-green band

<sup>a</sup> Ten specimens from Costa Rica.



across middle portion greatly reduced in width or obsolete; remiges dusky, faintly glossed with violaceous; malar region, chin, throat, and chest white, the chin and throat usually flecked or punctulated with dusky bronze; rest of under parts light cinnamon-rufous, the sides of breast glossed with bronze or bronze-green; bill blackish or dusky, the mandible usually more brownish for basal half or more; iris dark brown; feet dusky; length (skins), 64–67 (66); wing, 36.5–39 (37.8); tail, 17.5–22 (20.4); exposed culmen, 11–12 (11.4).<sup>a</sup>

*Immature male*.—Similar to the adult female but lower throat with greater or less admixture of metallic green feathers, and rump-band narrower.

Costa Rica (San José; San Pedro de San José; Escazú; Volcán de Irazú; Juan Viñas; Barranca; Boruca; San Pedro) and western Panamá (Bugaba, Volcán de Chiriquí; Bibaláz).

*Lophornis adorabilis* SALVIN, Proc. Zool. Soc. Lond., 1870, 207 (Bugaba, Volcán de Chiriquí, Panamá; coll. Salvin and Godman); Cat. Birds Brit. Mus., xvi, 1892, 425 (Bugaba and Bibaláz, Panamá).—ELLIOT, Classif. and Synop. Troch., 1879, 135.—SHARPE, Suppl. Gould's Mon. Troch., 1880, pl. 35.—ZELEDÓN, Anal. Mus. Nac. Costa Rica, i, 1887, 122 (San José, Costa Rica).—RIDGWAY, Proc. U. S. Nat. Mus., xi, 1888, 542 (San José); Rep. U. S. Nat. Mus. for 1890 (1891), pl. 30, fig. 2.—CHERRIE, Expl. Zool. Merid. Costa Rica, 1882, 45 (Boruca, s. w. Costa Rica); Auk, ix, 1892, 324 (Boruca; San José).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 365, pl. 57, figs. 1, 2.—BOUCARD, The Hum. Bird, ii, 1892, 73 (Chiriquí, Panamá); Gen. Hum. Birds, 1892, 34 (Bugaba).—SALVADORI and FESTA, Boll. Mus. Zool., etc., Torino, xiv, 1899, no. 339, 7 (Chiriquí).—BANGS, Auk, xxiv, 1907, 296 (Boruca).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 553 (Costa Rica).

[*Lophornis*] *adorabilis* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 83.—SHARPE, Hand-list, ii, 1900, 143.

[*Lophornis*] *adorabilis* HARTERT, Das Tierreich, Troch., 1900, 219.

*Dialia adorabilis* Mulsant and Verreaux, Hist. Nat. Ois.-Mouch., ii, livr. 2, 1875, pl. 25, fig. 1; iii, livr. 3, 1876, 208 (Bugaba).

[*Dialia*] *adorabilis* Mulsant, Ann. Soc. Linn. Lyon, xxii, 1876, 223.

### Genus POPELAIRIA Reichenbach.

*Gouldia* (not of Adams, 1847) BONAPARTE, Consp. Av., i, 1850, 86. (Type, *Trochilus langsdorffi* Bonnaterre and Vieillot.)

*Popelairia* REICHENBACH, Aufz. der Colibr., 1854, 12. (Type, *Trochilus popelairii* Du Bus.)

*Popelairia* (emendation) SIMON, Cat. Troch., 1897, 41.—HARTERT, Das Tierreich, Troch., 1900, 222.

*Gouldomyia* BONAPARTE, Rev. et Mag. de Zool., vii, pt. 2, 1854, 257. (Type, *Trochilus langsdorffi* Bonnaterre and Vieillot.)

*Prymnacantha* <sup>b</sup> CABANIS and HEINE, Mus. Hein., iii, April, 1860, 64. (Type, *Trochilus popelairii* Du Bus.)

*Prinnacantha* (error) Mulsant, Ann. Soc. Linn. Lyon, n. s., xxii, 1876, 223.

*Tricholopha* <sup>c</sup> HEINE, Journ. für Orn., 1863, 209, in text. (Type, *Popelairia tricholopha* Reichenbach = *Trochilus popelairii* Du Bus.)

<sup>a</sup> Ten specimens from Costa Rica.

<sup>b</sup> "Von *πρόρνα* (Hintertheil, Schwanz) und *ἀκρωθα* (Dorn)." (Cabanis and Heine.)

<sup>c</sup> "Von *θρήξ*, Haar; und *ἑλφορ*, Helmbusch." (Heine.)

*Mythina* Mulsant, Ann. Soc. Linn. Lyon, n. s., xxii, 1876, 224 (Cat. Ois.-Mouch., p. 28); Hist. Nat. Ois.-Mouch., iii, 1876, 235. (Type, *Trochilus letitiae* Bourcier.)

*Mythinia* (emendation?) Mulsant and Verreaux, Hist. Nat. Ois.-Mouch., iii, 1876, 235.

Small Trochilidæ (length, including long tail of adult males, about 70–120 mm.) related to *Lophornis*, but differing in forked tail (in adult male greatly elongated, with lateral rectrices attenuated terminally), absence of ornamental head plumes (except a slender, lapwing-like crest in one species), and more uniform coloration.

Bill (unfeathered portion) shorter than head, straight, nearly terete; culmen rounded except basally, where more or less distinctly ridged; tomia smooth; mandible with the usual lateral median groove. Nasal operculum moderately broad to rather narrow, nude, but hidden by appressed frontal feathering, which anteriorly extends considerably beyond anterior end of nostrils, forming a short, obtuse point or antia on each side of culmen. Tarsus naked; inner toe about as long as middle toe, the outer toe slightly shorter. Wing between three and four times as long as exposed culmen, the outermost (tenth) primary longest, rather narrow but with tip rounded, the ninth with outer web abruptly incised (almost obliterated) for terminal third or fourth, in one species (*P. popelairi*) entire outer web of both ninth and tenth primaries obsolete. Tail in adult males about one and a half times as long as wing to more than twice as long, forked for much the greater part of its length, the lateral rectrices narrow and attenuated terminally; in adult females about three-fifths as long as wing, forked, but with lateral pair of rectrices shorter than the next.

*Coloration*.—Above metallic green or bronze-green, including pileum, the rump crossed by a narrow band or bar of white, this often succeeded by a blackish area. Adult males with chin, throat, and chest metallic green, the remaining under parts mostly green or blackish, or else chin and throat metallic green, chest and middle of breast and abdomen black, sides and flanks sooty; tail with longer rectrices blue-black, violet-black or grayish, the shafts white on under side; one species with a band of metallic orange-reddish, another with a spot of white, on chest. Adult females with under parts mixed black, green, and white, the lateral rectrices tipped with white and grayish basally.

*Range*.—Costa Rica to Peru, Bolivia, and Brazil. (Five species.)

It is probable that this genus should be restricted to *P. popelairi*, which differs from all the others in its very conspicuous, long and slender, lapwing-like crest, almost complete obliteration of outer web of ninth and tenth primaries, more strongly curved primaries, and relatively much shorter wing, the latter only about three times as long as the exposed culmen instead of nearly to quite four times as

long. In case two genera are recognized *P. conversi* and its allies would constitute a genus the earliest name for which appears to be *Gouldomyia* Bonaparte (1854).

KEY TO THE SPECIES AND SUBSPECIES OF POPELAIRIA.

- a. Tail excessively forked, the lateral rectrices slenderly attenuate; no white on head nor anterior under parts. (*Adult male*.)
- b. Conspicuously crested; thighs cinnamon-rufous. (Colombia to Peru.)  
**Popelairia popelairii**, adult male (extralimital).<sup>a</sup>
- bb. Without crest; thighs not cinnamon-rufous.
- c. No white pectoral spot; rectrices blue-black or dark steel blue, the lateral ones more than 40 mm. long, their shafts white beneath.
- d. Flanks metallic green; only center of breast black, the feathers tipped with metallic green or blue; throat and chest metallic grass-green; lateral rectrices strongly doubly curved. (*Popelairia conversi*.)
- e. Feathers of center of breast tipped with green; upper tail-coverts dark metallic green; wing 41–43.5 (42.6), tail 54.5–56.5 (55.2). (Central Colombia.)....**Popelairia conversii conversii**, adult male (extralimital).<sup>b</sup>
- ee. Feathers on center of breast tipped with bluish green or greenish blue; upper tail-coverts dark bronzy (at least in part); wing, 40–43 (41.4); tail, 46–61 (56.6). (Costa Rica to western Ecuador.)  
**Popelairia conversii æquatorialis**, adult male (p. 679).
- dd. Flanks pale brownish gray; whole breast uniform black; throat and chest metallic yellowish green; lateral rectrices curved outwardly only.  
**Popelairia langsdorffi**, adult male (extralimital).<sup>c</sup>

<sup>a</sup> *Trochilus popelairii* Du Bus, Esquis. Orn., livr. 2, 1846, pl. 6, and text (Peru; coll. Royal Mus. Belgium).—[*Gouldia*] *popelairii* Bonaparte, Consp. Av., i, 1850, 86.—*Gouldia popelairii* Gould, Mon. Troch., iii, 1854, pl. 127; Elliot, Classif. and Synop. Troch., 1879, 138.—*P[rymnacantha]* *popelairi* Cabanis and Heine, Mus. Hein., iii, 1860, 64.—*Prymnacantha popelairi* Gould, Introd. Troch., oct. ed., 1861, 86; Salvin, Cat. Birds Brit. Mus., xvi, 1891, 428.—*T[richolopha]* *popelairi* Heine, Journ. für Orn., 1863, 209, in text.—*Popelairia tricholopha* Reichenbach, Aufz. der Colibr., 1854, 12; Troch. Enum., 1855, 9, pl. 815, figs. 4905–4907.—*Popelaria tricholopha* Ridgway, Proc. U. S. Nat. Mus., iii, Oct. 27, 1880, 315 (Colombia).—[*Popelarea*] *popelairi* Sharpe, Hand-list, ii, 1900, 144.

<sup>b</sup> *T[rochilus]* *conversii* Bourcier and Mulsant, Ann. Sci. Phys. et Nat., etc., Lyon, ix, 1846, 313 (Bogotá, Colombia).—[*Gouldia*] *conversi* Bonaparte, Consp. Av., i, 1850, 86; Gould, Mon. Troch., iii, 1854, pl. 129; Introd. Troch., oct. ed., 1861, 86; Elliot, Classif. and Synop. Troch., 1879, 139, part.—*P[rymnacantha]* *conversi* Cabanis and Heine, Mus. Hein., iii, 1860, 65.—*Prymnacantha conversi* Salvin, Cat. Birds Brit. Mus., xvi, 1891, 430, part.—*Mellisuga conversi* Mulsant and Verreaux, Classif. Troch., 1866, 79.—[*Popelarea*] *conversi* Simon, Cat. Troch., 1897, 41.—*P[opelarea]* *conversi* (typica) Hartert, Das Tierreich, Troch., 1900, 223.

<sup>c</sup> *Trochilus langsdorffi* "Vieill [ot]" Temminck, Nouv. Rec. Planches Coloriées, iv, livr. 11, June, 1821, pl. 66, fig. 1 (Brazil; coll. Langsdorff).—*Ornismya langsdorffi* Lesson, Hist. Nat. Ois.-Mouch., 1829, pp. xx, 102, pl. 26; Suppl. Ois.-Mouch., 1830–31, 129, pl. 16; Les Troch., 1832, 101, pl. 35.—*Orthorhynchus langsdorffi* Lesson, Man. d'Orn., ii, 1828, 77.—[*Gouldia*] *langsdorffi* Bonaparte, Consp. Av., i, 1850, 86.—*Gouldia langsdorffi* Gould, Mon. Troch., iii, 1854, pl. 128; Introd. Troch., oct. ed., 1861, 86; Elliot, Classif. and Synop. Troch., 1879, 138.—*P[rymnacantha]* *langsdorffi* Cabanis and Heine, Mus. Hein., iii, 1860, 65.—*Prymnacantha langsdorffi* Mulsant and Verreaux,



cc. A white pectoral spot; rectrices purplish black, their shafts rufous beneath,<sup>a</sup> the lateral ones less than 40 mm. (Bolivia.)

**Popelairia letitiæ**, adult male (extralimital).<sup>b</sup>

aa. Tail slightly forked or double rounded, the lateral rectrices not attenuated; head and anterior under parts partly white. (*Adult females*.)

b. Thighs not rufescent; throat and chest not uniform sooty black.

c. Thighs black.....**Popelairia conversii æquatorialis**,<sup>c</sup> adult female (p. 680).

cc. Thighs white.....**Popelairia langsdorffi**, adult female (extralimital).

bb. Thighs rufescent; throat and chest uniform sooty blackish.

**Popelairia popelairii**, adult female (extralimital).

### POPELAIRIA CONVERSII ÆQUATORIALIS (Berlepsch and Taczanowski).

#### SALVIN'S THORN-TAIL.

*Adult male*.—Above deep metallic green (brightest on pileum), the lower rump and shorter upper tail-coverts usually dark coppery bronze or partly of this color; a narrow white band across upper rump; tail slightly glossy blue-black, the shafts of the rectrices white basally, passing into brownish gray terminally, pure white for entire length on under surface, the webs brownish gray immediately next to shaft; remiges and primary coverts dusky, very faintly glossed with purplish; chin, throat, and chest bright metallic grass green; rest of under parts duller metallic green, the center of breast with a patch of metallic bluish green or greenish blue, intermixed centrally with dark blue or bluish black; femoral tufts white; bill black; iris dark brown; feet dusky; length (skins), 93–110 (104); wing, 40–43

Hist. Nat. Ois.-Mouch., iii, 1877, 238, pl. 94; Salvin, Cat. Birds Brit. Mus., xvi, 1891, 429.—*Mellisuga langsdorffi* Mulsant and Verreaux, Classif. Troch., 1866, 79.—*Popelaria langsdorffi* Ridgway, Proc. U. S. Nat. Mus., iii, Oct. 27, 1880, 315 (Brazil; Pebas, e. Peru).—*P[opelairia] langsdorffi* Hartert, Das Tierreich, Troch., 1900, 223.—(?) *Gouldia melanosternon* Gould, Ann. and Mag. N. H., ser. 4, i, May, 1868, 323 (Napo, Pebas, and Ucayali, e. Peru; coll. J. Gould).—[*Trochilus*] *melanosternon* Gray, Handlist, i, 1869, 146, no. 1879.

<sup>a</sup> According to Elliot; but Salvin says they are white beneath.

<sup>b</sup> *Trochilus letitiæ* Bourcier and Mulsant, Ann. Sci. Phys. et Nat., etc., Lyon, iv, 1852, 143 (Bolivia).—[*Gouldia*] *laetitia* Reichenbach, Aufz. der Colibr., 1854, 12.—*Gouldia letitiæ* Gould, Mon. Troch., iii, 1855, pl. 130; Introd. Troch., oct. ed., 1861, 86; Elliot, Classif. and Synop. Troch., 1879, 139.—*P[rymnacantha] laetitiæ* Cabanis and Heine, Mus. Hein., iii, 1860, 64, footnote.—*Mellisuga letitiæ* Mulsant and Verreaux, Classif. Troch., 1866, 79.—*Prymnacantha letitiæ* Salvin, Cat. Birds Brit. Mus., xvi, 1891, 431.—*Mythina letitiæ* Mulsant and Verreaux, Hist. Nat. Ois.-Mouch., iii, 1877, 245.—[*Mythina*] *letitiæ* Mulsant, Ann. Soc. Linn. Lyon, xxii, 1876, 224.—*P[opelairia] letitiæ* Hartert, Das Tierreich, Troch., 1900, 224.

<sup>c</sup> I have no females of *P. c. conversii* nor *P. letitiæ* for comparison.

(41.4); tail, 46-61 (56.6), middle rectrices 10-18 (11.9); exposed culmen, 11.5-12.5 (11.8).<sup>a</sup>

*Adult female*.—Upper parts as in adult male, but lower rump and upper tail-coverts darker (mostly purplish black or blackish bronze); four middle rectrices bluish black with basal portion of outer web bronze-green, the tip with a very narrow mesial streak of whitish; outermost rectrix with outer web white basally, passing into pale brownish gray distally, crossed by a broad subterminal band of blue-black and broadly tipped (across both webs) with white; second and third rectrices blue-black, with middle portion of outer web greenish or bronzy gray, the second with a distinct, the third with a minute (mesial) white tip; chin and throat opaque black (sometimes intermixed with whitish) bordered along each side by a broad white stripe, covering malar region; other under parts mostly black medially (the feathers of chest usually tipped with green), the sides of breast, sides, and flanks mostly metallic green, the space between this and black along middle line of abdomen white; bill, etc., as in adult male; length (skins), 70-75 (72); wing, 38.5-40.5 (39.5); tail, 22-24.5 (23.5), middle rectrices, 12.5-14.5 (13.6); exposed culmen, 11-13 (12.2).<sup>b</sup>

*Young male*.—Similar to the adult female, but tail longer and more deeply forked, and with more green on under parts.

*Immature male*.—Similar to adult male (including tail), but with a white rectal stripe and flank-patches, and green of under parts more broken.

<sup>a</sup> Ten specimens from Costa Rica.

<sup>b</sup> Eight specimens.

| Locality.                                                                       | Wing. | Tail. | Middle<br>rec-<br>trices. | Ex-<br>posed<br>culmen. |
|---------------------------------------------------------------------------------|-------|-------|---------------------------|-------------------------|
| MALES.                                                                          |       |       |                           |                         |
| Ten adult males from Costa Rica.....                                            | 41.4  | 56.3  | 11.2                      | 11.9                    |
| Four adult males ( <i>P. c. conversii</i> ) from central Colombia (Bogotá)..... | 42.6  | 55.2  | 11.2                      | 11.3                    |
| Two adult males from western Ecuador.....                                       | 41.5  | 57.7  | 15.5                      | 11.7                    |
| FEMALES.                                                                        |       |       |                           |                         |
| Eight adult females from Costa Rica.....                                        | 39.5  | 23.5  | 13.6                      | 12.2                    |
| Three adult females from western Ecuador.....                                   | 38    | 20.5  | 13.5                      | 11.8                    |

Except that they have longer bills, and that the females usually have the subterminal black band of lateral rectrices narrower, I am unable to distinguish Costa Rican and Panaman examples from those from western Ecuador; but they are, if anything, more different than the latter from Bogotá specimens, representing true *P. conversii*. The series from Ecuador is, unfortunately, too small for satisfactory comparison, consisting of only two males and three females. Should a larger series prove the Costa Rican specimens to be separable, I suggest that they bear the name *Popelairia conversii salvini* Zeledón (manuscript), Mr. Zeledón having at one time contemplated so naming the Costa Rican bird. (Type, no. 199271, coll. U. S. Nat. Mus., Bonilla, Costa Rica, April 4, 1905; R. Ridgway.)

Costa Rica (Tucurríqui; Angostura; Naranjo de Cartago; Bonilla; Carrillo; La Hondura; Cariblanco de Sarapiquí), Panamá (Santa Fé de Verágua; Calovévora; Cordillera del Chucu; Lion Hill; Panamá), and western Ecuador (Baisa; Citado; Chimbo; Quito; Naranjál; Nanegál; Santo Domingo).

*Gouldia conversi* (not *Trochilus conversii* Bourcier and Mulsant) LAWRENCE, Ann. Lyc. N. Y., vii, 1862, 319 (Lion Hill, Panamá); ix, 1868, 123 (Tucurríqui, Costa Rica).—SALVIN, Proc. Zool. Soc. Lond., 1867, 154 (Santa Fé de Verágua, Panamá); 1870, 208 (Calovévora, Panamá).—FRANTZIUS, Journ. für Orn., 1869, 315 (Costa Rica).—GOULD, Proc. Zool. Soc. Lond., 1870, 803 (Citado, Ecuador).—ZELEDÓN, Cat. Aves de Costa Rica, 1882, 21; Anal. Mus. Nac. Costa Rica, i, 1887, 122.—BOUCARD, The Hum. Bird, ii, 1892, 74, part (Verágua); Gen. Hum. Birds, 1895, 42, part (Verágua; Ecuador).

[*Gouldia*] *conversi* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 84, part (Costa Rica; Verágua; Ecuador).

*Prinnacantha conversi* (not of Cabanis and Heine) MULSANT and VERREAUX, Hist. Nat. Ois.-Mouch., iii, livr. 4, 1877, 242, part (Verágua; Costa Rica; Ecuador).—SALVIN, Cat. Birds Brit. Mus., xvi, 1892, 430, part (Tucurríqui and Angostura, Costa Rica; Cordillera del Chucu, Calovévora, and Santa Fé de Verágua, Panamá; Baisa, Citado, Quito, and Chimbo, Ecuador).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 366, part (Naranjo de Cartago, etc., Costa Rica; Lion Hill, etc., Panamá; Ecuador).

[*Prinnacantha*] *conversi* MULSANT, Ann. Soc. Linn. Lyon, xxii, 1876, 223, part.

*Popelaria conversi* RIDGWAY, Proc. U. S. Nat. Mus., iii, Oct. 27, 1880, 315 (Costa Rica).

*Popelairia conversi* HARTERT (E. and C.), Novit. Zool., i, 1894, 19 (Naranjál, w. Ecuador; crit.).—RIDGWAY, Condor, vii, 1905, 157, in text (Bonilla, Costa Rica).

*P[opelairia] conversi (typica)* HARTERT, Das Tierreich, Troch., 1900, 223, part.

[*Popelairia*] *conversi* SHARPE, Hand-list, ii, 1900, 144, part.

*Popelairia conversi conversi* CARRIKER, Ann. Carnegie Mus., vi, 1910, 553 (Caribbean slope of Costa Rica, 1,000–3,000 ft.).

*Gouldia conversi aequatorialis* BERLEPSCH and TACZANOWSKI, Proc. Zool. Soc. Lond., 1883, 567 (Chimbo, w. Ecuador; coll. Count von Berlepsch).

*Popelairia conversi aequatorialis* HARTERT, Novit. Zool., v, 1898, 494 (Chimbo; crit.).—OBERHOLSER, Proc. U. S. Nat. Mus., xxiv, 1902, 342 (Santo Domingo and Nanegál, w. Ecuador; crit.).

*P[opelairia] conversi aequatorialis* HARTERT, Das Tierreich, Troch., 1900, 223.

[*Popelairia*] *aequatorialis* SHARPE, Hand-list, ii, 1900, 144.

## Superfamily MICROPODII.

### THE SWIFTS.

=*Cypselidae* CABANIS, in Wiegmann's Archiv für Naturg., 1847, pt. i, 345.—BONAPARTE, Consp. Av., i, 1850, 64.—CABANIS and HEINE, Mus. Hein., iii, 1860, 82.—CARUS, Handb., Zool., i, 1868–75, 253.—GARROD, Proc. Zool. Soc. Lond., 1873, 463.—FUERBRINGER, Unters. Morph. Syst. Vög., ii, 1888, 1381.

=*Cypselinae* (not of Bonaparte, 1838) CABANIS, in Wiegmann's Archiv für Naturg., 1847, part i, 345.—BONAPARTE, Consp. Av., i, 1850, 64.—SUNDEVALL, Met. Nat. Av. Disp. Tent., ii, 1873, 87 (English translation, 1889, 164).

=*Cypseli* RIDGWAY, Bull. Ills. State Lab. N. H., no. 4, May, 1881, 185.—SHUFELDT, Linn. Soc. Journ., Zool., xx, 1888, 300; Ibis, 1893, 84–100.—SHARPE, Rev. Classif. Birds, 1891, 81; Hand-list, ii, 1900, 88.—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 367.



=? *Ocyptilina* MILNE-EDWARDS, Ois. Foss., ii, 1867-1871.

= *Micropodoideæ* STEJNEGER, Stand. Nat. Hist., iv, 1885, 437, in text.

= *Micropodoidea* LUCAS, Auk, vi, Jan., 1889, 12.

= *Macropterygidae* (not of Lucas, 1895) HARTERT, Das Tierreich, Podarg., Caprim., Macropt., 1897, 63.

Small to rather large swallow-like Macrochires with bill short, flat, and broadly triangular; gape deeply cleft and without rictal bristles; nostrils opening vertically, near together, and non-operculate; tongue not extensile; palate ægithognathous; six to seven pairs of ribs and with eight to eleven secondaries and two to three feathers composing the alula.

Palate ægithognathous; maxillo-palatines unciform; basipterygoid processes absent; metasternum convex and entire (*Micropodidae* except *Tachornis*) or slightly concave with two foramina (*Dendrochelidonidae* and *Tachornis*); costal process small, manubrium rudimentary, keel very high; coracoid short, not implanted in a groove, the humero-coracoid fossa absent, the epicoracoid feebly developed; furcula widely U-shaped, with hypocleidium small and epicleidium obsolete; ribs, 6-7 on each side, the second to sixth pairs articulating with the margin of the sternum proper and not with the costal process; humerus very short, radius longer, metacarpals very long (except in *Dendrochelidonidae*); cæca absent; only the left carotid artery present (except in *Micropodidae*, part);<sup>a</sup> semitendinosus muscle absent; anterior toes subequal, cleft to the base, the inner toe more or less reversible,<sup>b</sup> the hallux relatively small, directed inward or sometimes forward; deep plantar tendons coraciine (of type Va); tarsi never conspicuously longer than middle toe (with claw), always nonscutellate, sometimes feathered (occasionally the toes also); primaries 10, greatly elongated, either the tenth or ninth longest; secondaries relatively very short, 8-11 in number; alula composed of 2-3 feathers; rectrices 10, always shorter than primaries, the tail very variable in shape but usually more or less forked or emarginate, never graduated or distinctly rounded, the shafts of rectrices (in Subfamily Chæturinae) often very rigid and extruded, or "spine-tipped."

#### KEY TO THE FAMILIES OF MICROPODII.

- a. Tarsus longer than first digit; head without crest or ornamental plumes, flanks without a downy or silky patch, and general plumage hard; rostral portion of cranium broad; nasals triradiate, overlapping frontals; ecto-ethmoid wide; vomer T-shaped, much expanded anteriorly; palatines notched exteriorly; metasternum convex, entire (with foramina in *Tachornis*); ulna shorter than second metacarpal; phalanges (except ultimate and penultimate) very short or obsolete; shoulder muscles and deep plantar tendons strictly cypseline. (Cosmopolitan, except colder regions.).....*Micropodidae* (p. 683).

<sup>a</sup> According to Garrod (Proc. Zool. Soc. Lond., 1873, 471) both carotids are present in *Cypseloides fumigatus*.

<sup>b</sup> Said to be permanently reversed (the toes in pairs) in some genera, but I can not find that this is true from examination of specimens.

- aa. Tarsus shorter than first digit; head with a crest or with mystacial or superciliary plumes, flanks with a patch of downy or silky feathers, and general plumage soft; rostral portion of cranium moderate; nasals forked, abutting against frontals; ecto-ethmoid narrow; vomer scarcely expanded; palatines unnotched; metasternum slightly concave, perforated by two foramina; ulna longer than second metacarpal; phalanges not shortened; shoulder muscles passerine; deep plantar tendons characteristic. (Indo-Malayan Subregion and Papuan portion of Australian Region.).....*Dendrochelidonidæ* (extralimital).<sup>a</sup>

## Family MICROPODIDÆ.

### THE TRUE SWIFTS.<sup>b</sup>

= *Micropodidæ* LUCAS, Auk, vi, 1889, 13.

= *Apodinae* + *Chaeturinae* HARTERT, Das Tierreich, Podarg., Caprim., Macropt., 1897, 62, 63, 65, 80.

= *Cypselidæ* SHARPE, Hand-list, ii, 1900, 89.

Micropodii with the tarsus longer than the first digit; head without crest or plumes, flanks without downy or silky feathers, and general plumage hard; rostral portion of cranium broad; nasal triradiate, overlapping frontals; ecto-ethmoid wide; vomer T-shaped, much expanded anteriorly; palatines notched anteriorly; metasternum convex, usually entire (with foramina in *Tachornis* only?); ulna shorter than second metacarpal; phalanges (except ultimate and penultimate) very short or obsolete; shoulder muscles and deep plantar tendons strictly cypseline.

Bill very small, broadly triangular, depressed, the culmen rather strongly decurved, the maxillary tomium without notch; gape deeply cleft, without rictal bristles; nostrils opening vertically, near together, longitudinally elliptical or oval, nearly parallel, or more or less divergent posteriorly; frontal feathering usually extending over lower portion of nasal fossæ, sometimes nearly to anterior end of nostril, sometimes also extending forward medially, between base of nostrils; anterior toes subequal (but one or both of the lateral ones usually very slightly shorter than the middle), cleft to the base, and covered with skin or feathers (non-scutellate); hallux conspicuously smaller than lateral toes (sometimes less than half as long

<sup>a</sup> *Dendrochelidonidæ* Lucas, Auk, vi, 1889, 12.—*Macropterygidæ* Lucas, Auk, xii, 1895, 156.—*Macropteryginæ* Hartert, Das Tier., Podarg., Caprim., Macr., 1897, 63.—*Hemiprocnidæ* Oberholser, Proc. Biol. Soc. Wash., xix, May 1, 1906, 68, in text.

This very well-characterized family of Swifts comprises a single genus (*Hemiprocnæ* Nitzsch, Obs. Av. Carot. Com., 1829, 15, type, *Cypselus longipennis* Temminck; see Oberholser, Proc. Biol. Soc. Wash., xix, 1906, 67, 68), containing about seven species. The nidification of the *Dendrochelidonidæ* is also peculiar, the nest being attached to the upper side of a branch, composed of bits of bark, etc., held together by the bird's saliva, and barely large enough to hold the single egg. They also perch freely upon branches, while none of the *Micropodidæ* do, so far as known.

<sup>b</sup> As distinguished from the Tree Swifts, family *Dendrochelidonidæ*.

as inner toe), directed inward, more or less versatile or capable of being directed forward, the inner toe also more or less versatile, or capable of being directed backward.

The Swifts are eminently aerial birds and, so far as known, are the only ones among all birds of flight which do not perch upon the branches of trees—a remarkable characteristic when their similarity in general habits in other respects to the Swallow is considered. They cling easily against the side of vertical surfaces, as a rock or the inside of a hollow tree trunk or a chimney, pressing the tail against the surface as an additional support (as in the case of woodpeckers), but apparently they are not able to grasp a branch with their feet in such a way as to maintain a fixed position thereon.<sup>a</sup>

Like the Swallows (Hirundinidæ) the Swifts are insectivorous and take their prey while flying; but their manner of flight is different, as might be expected from the very different structure of their wings. In this respect, however, there is much difference between different genera, the flight of some being characterized by a velocity perhaps unequaled among other birds, while that of others (as for example the species of *Chætura*) is much less rapid and more fluttering.

There are many interesting peculiarities connected with the nidification of Swifts, some of which may be briefly described. In this connection it may be mentioned that the salivary glands are often highly developed, and the glutinous or mucilaginous substance which they secrete enters more or less into the composition of the nest. In the oriental genus *Collocalia* (belonging to the subfamily Chæturinæ) the nest is sometimes composed entirely of this substance, and constitutes an important delicacy among Chinese and Japanese epicures. The nest of the common Chimney Swift (*Chætura pelagica*) of the eastern United States and related species of the same genus is of similar form to that of the “edible birds’ nests” above mentioned, but is composed of dead twigs glued together by the saliva. The beautiful large black and white swift of Guatemala, *Panyptila sancti-hieronimi*, attaches to the under side of an overhanging rock a tube some feet in length, constructed of the pappus or seed-down of plants, caught flying in the air. Entrance to this is from the lower end, and the eggs are laid on a kind of shelf near the top. A smaller but otherwise similar species (*P. cayanensis*) found from Nicaragua southward attaches a similar nest to the under side of a large branch of a forest tree.<sup>b</sup> *Chætura brachyura* is said to make

<sup>a</sup> The Tree Swifts (Dendrochelidonidæ), however, are said to perch upon trees in the manner of Swallows and other birds.

<sup>b</sup> See Richmond, Auk, xv, 1898, 7-10, pl. 1.



a somewhat similar nest, but with the tube more contracted below, out of seeds of *Trixis divaricata*, suspends it to a horizontal branch, and covers the outside with feathers; as there is no shelf on the inside, it is believed that the eggs are glued against the side and brooded on by the bird while in an upright position.<sup>a</sup>

Owing to the extreme velocity of their flight and the great height at which they usually fly, Swifts are very difficult birds to collect, and consequently comparatively few species of the family are well represented in collections. On this account it is not easy to obtain a correct understanding of their geographic range and variations; consequently our present knowledge is, in the case of many species, imperfect and tentative.

#### KEY TO THE GENERA OF MICROPODIDÆ.

- a. Toes with the number of phalanges abnormal (2, 3, 3, 3); hallux lateral (on inner side of foot), capable of being directed forward (the foot then pamprodactylous), the inner toe sometimes reversible (capable of being directed backward), the toes then paired; tarsi (sometimes toes also) feathered. (Subfamily *Micropodinæ*.<sup>b</sup>)
- b. Outer and middle toes directed forward, in line with axis of tarsus; feet very strong, the tarsi relatively shorter.
- c. Toes naked.....**Micropus** (extralimital).<sup>c</sup>
- cc. Toes feathered.
- d. Tail slightly forked (for less than one-fourth its length), the rectrices not attenuated terminally; toes more sparsely feathered; feathers of pileum and under parts distinctly outlined, broadly rounded.
- dd. Tail deeply forked (for at least half its length), the lateral rectrices attenuated terminally; toes more densely feathered; feathers of pileum and under parts blended.....**Panyptila** (p. 690).
- bb. Outer and middle toes inclined outwards, at more or less of an angle with axis of tarsus; feet proportionately much weaker, with tarsus relatively longer.

<sup>a</sup> This style of nest is so different from that of the species of *Chactura*, whose nidification is known, that the proper identification of the species is very questionable. At the same time, it may be remarked that the suggested mode of securing the eggs is highly improbable.

<sup>b</sup> *Cypselinæ* (not of Bonaparte, 1838) Scater, Proc. Zool. Soc. Lond., 1865, 579; Carus, Handb. Zool., i, 1868-75, 253.—*Micropodinæ* Stejneger, Stand. Nat. Hist., iv, 1885, 437, in text.—*Apodinæ* Hartert, Das Tier., Podarg., Caprim., Macropt., 1897, 80.

<sup>c</sup> *Apus* (not *Apos* Scopoli, 1777, prior by anteriority) Scopoli, Intr. Nat. Hist., 1777, 483 (type, *Hirundo apus* Linnæus).—*Micropus* Meyer and Wolf, Taschenb. Deutschl. Vög., i, 1810, 280 (type, *Hirundo apus* Linnæus).—*Cypselus* Illiger, Prodr. Orn., 1811, 229 (type, *Hirundo apus* Linnæus).—*Cipselus* (emendation) Vieillot, Analyse, 1816, 38.—*Brachypus* Meyer, Vög. Liv.-u. Esthl., 1815, 142 (type, *Hirundo apus* Linnæus).—*Cypcelus* (emendation?) D'Orbigny, Voy. Am. Mérid., iv, pt. 3, 1839, 357.

This genus is numerously represented in the Eastern Hemisphere, but, so far as known, there are only two American species, both of which belong to the southern continent.

- c. Toes naked; tail forked for less than half its length *a*. . . . . *Tachornis* (p. 693).  
 cc. Toes feathered; tail forked for more than half its length.

*Claudia* (extralimital).<sup>b</sup>

- aa. Toes with the number of phalanges normal (2, 3, 4, 5); hallux more posterior, not reversible, the foot never pamprodactylous nor toes paired; tarsi and toes naked. (Subfamily *Chæturinae*).<sup>c</sup>

- b. Hallux relatively longer, more than half as long as inner toe.

- c. Tarsus not longer (usually shorter) than middle toe with claw.

- d. Size very large (wing not less than 190 mm.); tenth (outermost) primary longest, or at least not distinctly shorter than ninth; distance from tips of longest secondaries to tip of longest primary not more than two-thirds the total length of wing; tail two-ninths to one-fourth as long as wing; bill relatively much stouter; under tail-coverts and a flank-stripe white.

*Hirundapus* (extralimital).<sup>d</sup>

- dd. Size smaller (wing less than 170 mm., the wing relatively very long); tenth (outermost) primary distinctly shorter than ninth; distance from tips of longest secondaries to tip of longest primary much more than two-thirds the total length of wing; tail only one-sixth as long as wing, the longest coverts reaching nearly to its tip; no white on under tail-coverts or flanks.

*Mearnsia* (extralimital).<sup>e</sup>

- cc. Tarsus longer than middle toe with claw.

- d. Size very large (wing 190-230 mm.); rectrices more firm, with very rigid shafts; adults with a white collar (at least on hindneck).

*Streptoprocne* (p. 696).

- dd. Size much smaller (wing less than 180 mm.); rectrices softer, with less rigid shafts; adults without white collar.

- e. Tail distinctly emarginate, the rectrices soft, with shafts not at all rigid nor produced. . . . . *Nephæcetes* (p. 703).

- ee. Tail truncate or slightly rounded or double-rounded, the rectrices firm, with shafts rigid and, sometimes, slightly produced.

*Cypseloides* (p. 710).

- bb. Hallux relatively much smaller, not more (usually less) than half as long as inner toe. . . . . *Chætura* (p. 714).

<sup>a</sup> According to Gosse (Birds of Jamaica, p. 59) the sternum of *Tachornis phænicobia* (type of the genus) has two large metasternal foramina and also a foramen perforating the anterior portion of the keel. In this respect *Tachornis* differs from all other Micropodinae, so far as known, all the latter having both the metasternum and carina sterni entire.

<sup>b</sup> *Claudia* Hartert, Cat. Birds Brit. Mus., xvi, 1892, 469 (type, *Cypselus squamatus* Cassin).

The single known species belonging to this genus occurs in Guiana, Brazil, and eastern Peru.

<sup>c</sup> = *Chæturinae* Sclater, Proc. Zool. Soc. Lond., 1865, 597; Stejneger, Stand. Nat. Hist., iv, 1885, 437; Hartert, Das Tierreich, Podarg., Caprim., Macropt., 1897, 63, 65. > *Chæturinae* Carus, Handb. Zool., i, 1868-75, 253 (includes *Dendrochelidonidae*).

<sup>d</sup> *Hirundinapus* Hodgson, Journ. Asiat. Soc. Bengal, v, no. 60, Dec., 1836, 780, in text. (Type, *Chætura nudipes* Hodgson.)—*Hirundinapus* (emendation) Sclater, Proc. Zool. Soc. Lond., 1865 (March, 1866), 607.—*Pallene* Lesson, Compl. Buffon, viii, 1837, 493. (Type, *Cypselus giganteus* Temminck.)

<sup>e</sup> New genus. Dedicated to Dr. Edgar A. Mearns, U. S. A., not only in recognition of his valuable services to ornithology, but also as a token of the author's high esteem. (Type, *Chætura picina* Tweeddale.)

## Genus AËRONAUTES Hartert.

*Aëronautes* <sup>a</sup> HARTERT, Cat. Birds Brit. Mus., xvi, 1892, 459. (Type, *Cypselus melanoleucus* Baird.)

Medium-sized Cypselinæ (length, about 135–152 mm.) with toes (as well as tarsus) feathered, outer and middle toes directed forward on line with axis of tarsus, tail forked for less than one-fourth its length, and feathers of pileum and under parts distinctly outlined (broadly rounded).

Tail about half as long as wing, moderately forked (for less than one-fourth its length), the lateral rectrices not attenuated terminally, the outermost pair little if any longer than next pair; tenth (outermost) primary shorter than ninth, but equal to or longer than eighth; feet very stout, the toes short and thick and claws strong; tarsi and toes feathered (except on soles of latter); middle toe slightly longer than tarsus, but scarcely longer than inner toe, which is slightly longer than the outer; hallux very short, inserted laterally on inner side of foot.

*Coloration*.—Dusky above and on lateral under parts; throat, chest, median line of breast and abdomen, and a patch on upper flanks or sides of rump, dull white.

*Nidification*.—Nest placed in crevices of vertical cliffs or walls of old buildings, composed of feathers, bark, grass, wool, cotton, etc., glued to its support by salivary excretion.

## AËRONAUTES MELANOLEUCUS (Baird).

## WHITE-THROATED SWIFT.

*Adults (sexes alike)*.—Pileum and hindneck grayish brown to very dark sooty brown, sometimes uniform but usually becoming paler on forehead, and with feathers indistinctly margined with paler, especially on frontal region, the projecting edges of crown dull whitish, forming a distinct narrow superciliary streak; back, scapulars, wing-coverts, rump, and upper tail-coverts plain sooty blackish, the tail similar but rather more sooty (less blackish); a large patch of white or brownish white on each side of rump, more or less pointed anteriorly; remiges dark sooty brown or sooty blackish, the secondaries broadly tipped on outer web with dull or brownish white, the inner webs of primaries passing into pale grayish brown on edges (except on longer quills); a dusky spot immediately in front of eye, the loreal region otherwise whitish; auricular and postocular regions sooty grayish brown; suborbital and malar regions, chin, throat, chest, and median portion of breast and abdomen white (usually dull or more or less tinged with brownish); sides and flanks (broadly) and under tail-coverts plain very dark sooty brown or sooty black; feathers along

<sup>a</sup> 'Aἴρ, air; ναύτης, a sailor. (Richmond.)



edge of wing broadly margined with pale grayish brown or dull brownish white; bill black; iris dark brown; feet dull livid pinkish.

*Adult male*.—Length (skins), 138–152 (147); wing, 131–148 (145); tail, 53.5–63.5 (57.5); exposed culmen, 5–6.5 (5.9); tarsus, 9.5–11 (10.2); middle toe, 6.5–8 (7.6).<sup>a</sup>

*Adult female*.—Length (skins), 136–152 (145); wing, 135.5–149 (142.5); tail, 52.5–61.5 (57); exposed culmen, 6–6.5 (6.2); tarsus, 10–11 (10.3); middle toe, 7–8 (7.3).<sup>b</sup>

*Young*.—Similar to adults, but white of under parts duller (more or less grayish or sooty) and blackish of sides duller, especially anteriorly, where more sooty grayish and less strongly contrasted with whitish of throat, etc.

Western United States and southward to Guatemala; north to Washington (Lake Chelan), southern Montana (Belt River), and southwestern Alberta (Henry House), east to western South Dakota (Sturgis; Bad Lands), western Nebraska, Wyoming (Hanton's ranch; between Cheyenne and Fort Laramie), Colorado, New Mexico, and western Texas (Chisos Mountains), south to Lower California (San Pedro Martir Mountains; Coronados Islands; Guadalupe Island), and through Mexico (Senoyita, etc., Sonora; Chico, Hidalgo; Miquihuana, Nuevo León; mountains near Orizaba, Vera Cruz?), to highlands of Guatemala (gorge of Rio Guacalate, near Dueñas); apparently breeding throughout its range.

?*Acanthylis saxatilis* WOODHOUSE, Rep. Sitgreaves' Expl. Zuñi and Col. R., 1853, 64 (Inscription Rock, New Mexico).<sup>c</sup>—CASSIN, Illustr. Birds Cal., Tex., etc., 1855, 252.—COUES, Ibis, 1865, 356, in text.

[*Panyptila*] *saxatilis* COUES, Key N. Am. Birds, 1872, 182.

| <sup>a</sup> Fourteen specimens.                                     |       | <sup>b</sup> Ten specimens. |                         |         |                |
|----------------------------------------------------------------------|-------|-----------------------------|-------------------------|---------|----------------|
| Locality.                                                            | Wing. | Tail.                       | Ex-<br>posed<br>culmen. | Tarsus. | Middle<br>toe. |
| MALES.                                                               |       |                             |                         |         |                |
| Ten adult males from Rocky Mountain district, United States.         | 140.9 | 58                          | 6                       | 10.3    | 7.8            |
| Three adult males from California.....                               | 139.5 | 55                          | 5.5                     | 9.8     | 7              |
| One adult male from Guatemala.....                                   | 148   | 60                          | 5.5                     | 9.5     | 7              |
| FEMALES.                                                             |       |                             |                         |         |                |
| Seven adult females from Rocky Mountain district, United States..... | 142.3 | 57.6                        | 6.2                     | 10.2    | 7.4            |
| One adult female from California.....                                | 141   | 54.5                        | 6                       | 10      | 6.5            |
| One adult female from Nuevo Leon (Miquihuana).....                   | 144.5 | 54                          | .....                   | 11      | 7.5            |
| One adult female from Guatemala.....                                 | 143.5 | 59                          | 6.5                     | 10.5    | 7.5            |

<sup>c</sup> No specimens obtained, and, although there can be no doubt that this is the species seen, the description is not entirely applicable. See Baird, Rep. Pacific R. R. Surv., ix, 1858, 143.

*Panyptila saxatilis* COUES, Check List, 1873, no. 269; 2d ed., 1882, no. 403; Birds Northwest, 1874, 265.—RIDGWAY, Bull. Essex Inst., 1875, 20, 21 (Toiyabe and East Humboldt Mts., Nevada); Orn. 40th Parallel, 1877, 564 (Salt Lake City, Utah, etc.; habits).—HENSHAW, Rep. Orn. Spec. Wheeler's Surv., 1874, 129 (Ft. Wingate, New Mexico; habits); Zool. Expl. W. 100th Merid., 1875, 370 (Inscription Rock and Ft. Wingate, New Mexico).—MINOT, Bull. Nutt. Orn. Club, v, 1880, 231 (Manitou, Colorado; breeding).

[*Panyptila*] *saxatilis* COUES, Key N. Am. Birds, 2d ed., 1884, 456.

*Panyptila saxatilis* YARROW and HENSHAW, Rep. Orn. Spec. Wheeler's Surv., 1874, 23 (between Grass Valley and Gunnison, Utah).

*Cypselus saxatilis* RIDGWAY, Proc. U. S. Nat. Mus., iii, March 27, 1880, 6, 188; Nom. N. Am. Birds, 1881, no. 349.—WILLIAMS, Bull. Nutt. Orn. Club, vii, 1882, 123 (Belt R., Montana).—BELDING, Proc. U. S. Nat. Mus., v, 1883, 547 (San José del Cabo, Lower California, May 17).—ALLEN and BREWSTER, Bull. Nutt. Orn. Club, viii, 1883, 196 (Colorado Springs, Garden of the Gods, Cheyenne Canyon and Williams Canyon, Colorado).—DREW, Auk, ii, 1885, 17 (Colorado, breeding at 6,000-12,500 ft.).

*Micropus saxatilis* STEJNEGER, Auk, i, July, 1884, 230.

*Cypselus melanoleucus* BAIRD, Proc. Ac. Nat. Sci. Phila., vii, June, 1854, 118 (San Francisco Mt., Arizona; coll. U. S. Nat. Mus.).—CASSIN, Illustr. Birds Cal., Tex., etc., 1855, 248.—KENNERLY, Rep. Pacific R. R. Surv., iv, pt. vi, 1856, 16 ("Camp 123").

[*Cypselus*] *melanoleucus* GRAY, Hand-list, i, 1869, 64, no. 738.

*Panyptila melanoleuca* BAIRD, Rep. Pacific R. R. Surv., ix, 1858, 141; ed. 1860 (Birds N. Am.), 141, pl. 18, fig. 1.—HEERMANN, Rep. Pacific R. R. Surv., x, no. 1, 1859, 10 (San Fernando Pass and Palm Spring, California; Tucson, Arizona; "Texas"); pt. iv, no. 2, 1859, 35.—KENNERLY, Rep. Pacific R. R. Surv., x, pt. iv, no. 3, 1859, 23, pl. 18, fig. 1 (Bill Williams Fork, Arizona).—SCLATER and SALVIN, Ibis, 1859, 125 (Dueñas, Guatemala; habits).—COOPER, Proc. Cal. Ac. Sci., 1861, 122 (Cajón Pass, California); Orn. Cal., 1870, 347.—SCLATER, Proc. Zool. Soc. Lond., 1865, 607 (Dueñas); Journ. für Orn., 1867, 128.—COUES, Proc. Ac. Nat. Sci. Phila., 1866, 57 (Inscription Rock, New Mexico; habits).—SUMICHRIST, Mem. Bost. Soc. N. H., i, 1869, 562 (mts. near Orizaba, Vera Cruz?).—ALLEN, Bull. Mus. Comp. Zool., iii, 1872, 151, 180 (Colorado; habits).—AIKEN, Proc. Bost. Soc. N. H., xv, 1872, 206 (Colorado).—SALVIN, Ibis, 1873, 428 (Guatemala).—RIDGWAY, Bull. Essex Inst., v, 1873, 173, 185 (Salt Lake City, Utah; Colorado).—BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 424, pl. 45, fig. 5; iii, 1874, 521 (Santa Ana and San Buenaventura, California).

[*Panyptila*] *melanoleuca* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 94.

*Panyptela melanoleuca* ALLEN, Am. Nat., vi, 1872, 350 (Garden of the Gods, Colorado).

*Micropus melanoleucus* RIDGWAY, Auk, i, July, 1884, 230, footnote.—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886, no. 425.—EVERMANN, Auk, iii, 1886, 180 (Santa Paula Creek, Ventura Co., California).—SCOTT, Auk, iii, 1886, 430 (Santa Catalina Mts. and near Tucson, Arizona).—BRYANT (W. E.), Bull. Cal. Ac. Sci., ii, 1887, 291 (Guadalupe Island; habits).—SHUFELDT, Ibis, 1887, 151, pl. 5 (bet. Cheyenne and Laramie, Wyoming; Ft. Wingate, New Mexico; habits).—MEARNS, Auk, vii, 1890, 255 (Ft. Verde and San Francisco Mt., Arizona).—LOWE, Auk, xi, 1894, 268 (Wet Mts., Colorado, 10,000 ft.).

[*Micropus*] *melanoleucus* RIDGWAY, Man. N. Am. Birds, 1887, 303.

- Aëronautes melanoleucus* HARTERT, Cat. Birds Brit. Mus., xvi, 1892, 459.—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 368.—ANTHONY, Zoë, iv, 1893, 237 (San Pedro Martir Mts., etc., and Coronados Islands, Lower California); Auk, xii, 1895, 139 (San Fernando, Lower California; breeding).—AMERICAN ORNITHOLOGISTS' UNION COMMITTEE, Auk, x, 1893, 62; Check List, 2d ed., 1895, no. 425; 3d ed., 1910, 201.—BENDIRE, Life Hist. N. Am. Birds, ii, 1895, 185.—DAWSON, Wilson Bull., no. 10, 1896, 4 (Columbia R. gorge, Okanogan Co., Washington); Auk, xiv, 1897, 175 (Okanogan Co., Washington).—GRINNELL, Pub. 1, Pasadena Ac. Sci., 1897, 9 (San Nicolas I., California), 15 (San Clemente I., breeding); Pub. 2, 1898, 27 (Los Angeles Co., resident).—COOKE, Bull. Col. Agr. Coll., no. 37, 1897, 86 (Colorado, breeding from 6,000 to at least 12,000 ft.).—MERRIAM, North Am. Fauna, no. 16, 1899, 117 (Mt. Shasta, California).—CARY, Auk, xviii, 1901, 234 (Black Hills, Wyoming, breeding).—OBERHOLSER, Auk, xix, 1902, 300 (Chisos, Guadalupe, and Davis mountains, w. Texas).—BAILEY (Florence M.), Handb. Birds W. U. S., 1902, 232; Condor, ix, 1907, 169–172 (Capistrano, San Jacinto Mts., s. California; breeding habits).—BREWSTER, Bull. Mus. Comp. Zool., xli, 1902, 112 (Sierra de la Laguna, Lower California; crit., etc.).—SWARTH, Pacific Coast Avif., no. 4, 1904, 16 (Huachuca Mts., Arizona; habits).—RICHARDSON, Condor, vi, 1904, 135 (Piute Mts., Calif.).—MONTGOMERY, Auk, xxii, 1905, 14 (Green Gulch, Brewster Co., Texas).—KAEDING, Condor, vii, 1905, 134 (Guadalupe Island, flock, March 25).—SHARP, Condor, ix, 1907, 88 (San Diego Co., California, breeding).—PREBLE, North Am. Fauna, no. 27, 1908, 390 (15 m. s. of Henry House, s. w. Alberta, 1 spec., July).—RICHARDSON, Condor, x, 1908, 66 (Santa Catalina Is., California).—LINTON, Condor, x, 1908, 84 (San Clemente I.), 127 (Santa Cruz I., Dec.).—BOWLES, Condor, x, 1908, 192 (Lake Chelan, Washington, breeding).—HANNA, Condor, xi, 1909, 77–81 (breeding habits, etc.; descr. nest and eggs).—WRIGHT, Condor, xi, 1909, 100 (Coronados Islands, Lower California).—BROOKS, Auk, xxvi, 1909, 62 (Vaseux Lake, Okanogan Distr., Brit. Columbia).—VISHER, Auk, xxvi, 1909, 148 (badlands of w. South Dakota).—KERMODE, Prov. Mus. Vict., 1909, 51 (Keremos and Okanogan, Brit. Columbia).
- A[ëronautes] melanoleucus* RIDGWAY, Man. N. Am. Birds, 2d ed., 1896, 303.—HARTERT, Das Tierreich, Podarg., Caprim., Macropt., 1897, 83
- [Aëronautes] melanoleucus* SHARPE, Hand-list, ii, 1900, 94.

### Genus PANYPTILA Cabanis.

*Panyptila* <sup>a</sup> CABANIS, Wieg. Archiv für Naturg., xiii, 1847, 1, 345. (Type, *Hirundo cayanensis* Gmelin.)

*Pseudoprocne* STREUBEL, Isis, 1848, 357. (Type, *Hirundo cayanensis* Gmelin.)

Similar to *Aëronautes*, but with tail much more deeply forked (for at least half its length), the lateral rectrices attenuated, toes more densely feathered, and plumage of pileum and under parts soft and blended.

Outermost (tenth) primary acuminate, shorter than ninth but longer than eighth; tail about half as long as wing, forked for half its length or more, the lateral rectrices attenuated terminally; tarsus much longer than anterior toes, very stout; middle and inner toes

<sup>a</sup> “*παινίπτιλος*, gans befiedert, von *πάνω*, gar sehr, sehr viel, *valde*; *πτίλον*, Gefieder.” (Cabanis.)



equal in length, the outer slightly but decidedly shorter; hallux very short; all the toes, together with their claws, very strong, and, together with tarsus, rather densely feathered.

*Coloration*.—Glossy blue-black, relieved by a small white spot on each side of forehead, a white area covering chin, throat, upper chest, and sides of neck (extending across hindneck as a narrow band), and a white patch on each side of rump; secondaries and distal primaries grayish toward tip and margined terminally with white. Sexes alike.

*Nidification*.—Nest a long tubular structure, open at lower end and attached at the more or less enlarged upper end to the under surface of an overhanging rock or base of a branch of large tree, composed of downy plant seeds, plant down, bits of bark or lichens, etc., glued together by the bird's salivary excretion. Eggs placed in a lateral pocket within the enlarged upper portion of the tube.

#### KEY TO THE SPECIES OF PANYPTILA.

a. Smaller (wing 116–120). (Nicaragua to Brazil and Ecuador.)

*Panyptila cayanensis* (p. 691).

a. Larger (wing 180–195). (Guatemala.) ..... *Panyptila sancti-hieronymi* (p. 692).

#### PANYPTILA CAYANENSIS (Gmelin).

##### CAYENNE SWIFT

*Adults (sexes alike)*.—General color uniform velvety black with a faint bluish gloss; inner webs of primaries and terminal portion of secondaries mostly, or in part, dark grayish brown, the former narrowly edged, the latter terminally margined with white; a patch on each side of rump, a supraloral spot or broad streak, chin, throat, upper chest, and sides of neck white, the latter confluent with a band or collar of grayish white or pale brownish gray across hindneck; outer web of outermost pair of rectrices dull white or pale grayish basally; bill black; iris dark brown; feet (where not feathered) grayish brown or dusky, claws pale grayish brown or grayish white.

*Adult male*.—Length (skins), 118–121 (119.5); wing, 118–120 (119); tail, 55.5–60 (57.7); exposed culmen, 5–6.5 (5.7); tarsus, 8.5; middle toe, 6–7 (6.5).<sup>a</sup>

*Adult female*.—Length (skins), 119–123 (121); wing, 116.5–117.5 (117); tail, 54–58 (56); exposed culmen, 5.5–6 (5.7); tarsus, 8; middle toe, 5.5–6 (5.7).<sup>a</sup>

Southeastern Nicaragua (Rio Escondido) and southward through eastern Costa Rica,<sup>b</sup> eastern Panamá (Rio Chagres) through Colombia (Bogotá; Antioquía), Venezuela, the Guianas, and Amazon

<sup>a</sup> Two specimens.

<sup>b</sup> The species has not yet been recorded from Costa Rica, however, so far as I am aware.

Valley to western Ecuadór (Guayaquil), southeastern Brazil (Bahia), and Trinidad.

[*Hirundo*] *cayanensis* GMELIN, Syst. Nat., ii, 1789, 1024 (based on *Le Martinet à collier blanc* Buffon, Hist. Nat. Ois., vi, 671; *Martinet à collier de Cayenne* Daubenton, Pl. Enl., pl. 725, fig. 2).—LATHAM, Index Orn., ii, 1790, 583.

*Cypselus cayanensis* STEPHENS, Shaw's Gen. Zool.; x, 1817, 75.—LÉOTAUD, Ois. Trinidad, 1866, 81.

[*Cypselus*] *cayanensis* BONAPARTE, Consp. Av., i, 1850, 66.—GRAY, Hand-list, i, 1869, 64, no. 737.

*Panyptila cayanensis* BURMEISTER, Syst. Ueb. Th. Bras., ii, 1856, 369.—SCLATER, Proc. Zool. Soc. Lond., 1865, 606 (monogr.; Cayenne; Bahia).—PELZELN, Orn. Bras., iv, Abth., 1870, 401.—BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 424, footnotes.—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1879, 531 (Antioquia and Bogotá, Colombia).—HARTERT, Cat. Birds Brit. Mus., xvi, 1892, 461 (Merumé Mts., Brit. Guiana; Venezuela; Bogotá and Antioquia, Colombia; Venezuela; Bahia, Pará, and Santarém, Brazil; Samiria, upper Amazon).—RICHMOND, Proc. U. S. Nat. Mus., xvi, 1893, 515 (Rio Escondido).—CHAPMAN, Bull. Am. Mus. N. H., vi, 1894, 58 (Trinidad).—GOELDI, Bolet. Mus. Paraense, ii, no. 4, 1898, 430, pl., figs. 1-4 (nest).

[*Panyptila*] *cayanensis* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 94.—SHARPE, Hand-list, ii, 1900, 95.

*P[anyptila] cayanensis* HARTERT, Das Tierreich, Podarg., Caprim., Macropt., 1897, 83.

[*Panyptila cayanensis*] var. *cayanensis* BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 424.

*Hirundo cayanensis* VIEILLOT, Nouv. Dict. d'Hist. Nat., xiv, 1817, 513.

*Panyptila cayanensis* RICHMOND, Auk, x, 1893, 84 (Rio Escondido, Nicaragua; descr. nest).

*Panyptila cayennensis* CABANIS, Wiegmann's Archiv für Naturg., xiii, 1847, pt. i, 345.—SCLATER, Proc. Zool. Soc. Lond., 1865, 606 (Cayenne; Bahia); Journ. für Orn., 1867, 128; Ibis, 1897, 262 (Leguan, Essequibo R., Brit. Guiana; descr. nest).—LAYARD, Ibis, 1873, 389 (Pará, lower Amazon).—BERLEPSCH and TACZANOWSKI, Proc. Zool. Soc. Lond., 1883, 569 (Guayaquil, w. Ecuador).—SALVIN, Ibis, 1885, 436 (Merumé Mts., Brit. Guiana).—SCLATER (W. L.), Ibis, 1885, 318 (Guiana).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 370 (Rio Chagres, Panamá; etc.).—RICHMOND, Auk, xv, 1898, 7-10, pl. 1 (habits, notes, descr. nest, etc.; colored plate of bird and nest).—BERLEPSCH, Novit. Zool., xv, 1908, 268 (Cayenne).

### PANYPTILA SANCTI-HIERONYMI Salvin.

#### SAN GERÓNIMO SWIFT.

Precisely like *P. cayanensis* in coloration but about twice as large.

*Adult* (sex not determined).—Length (skins), 181-198 (188.5); wing, 185.5-190.5 (188); tail, 86.5-88 (87.2);<sup>a</sup> exposed culmen, 8; tarsus, 13; middle toe, 9.5.<sup>b</sup>

Highlands of Guatemala (San Gerónimo and Puebla Vieja, Vera Paz; Volcán de Fuego; near Antigua).

*Panyptila sancti-jeromæ* SALVIN, Ibis, 1863, 239, in text (nomen nudum); Proc. Zool. Soc. Lond., 1863, pl. 23.

<sup>a</sup> Two specimens.

<sup>b</sup> One specimen.

*anyptila sancti-hieronymi* SALVIN, Proc. Zool. Soc. Lond., 1863, 190 (San Gerónimo, Vera Paz, Guatemala; coll. Salvin and Godman).—SCLATER, Proc. Zool. Soc. Lond., 1865, 607 (monogr.); Journ. für Orn., 1867, 128.—SALVIN, Ibis, 1866, 195 (Guatemala; habits); 1874, 188 (breeding habits, etc.).—BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 424, footnote.—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 371 (San Gerónimo, Volcán de Fuego, and vicinity of Antigua).

*anyptila sancti-hieronymi* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 94.—SHARPE, Hand-list, ii, 1900, 95.

[*Cypselus*] *sancti hieronymi* GRAY, Hand-list, i, 1869, 64, no. 739.

*Panyptila sanctihieronymi* HARTERT, Cat. Birds Brit. Mus., xvi, 1892, 462.

*P[anyptila] sanctihieronymi* HARTERT, Das Tierreich, Podarg., Caprim., Macropt., 1897, 83.

[*Panyptila cayanensis*] var. *sancti-hieronymi* BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 424.

### Genus TACHORNIS Gosse.

*Tachornis* GOSSE, Birds Jamaica, 1847, 58. (Type, *T. phœnicobia* Gosse.)

Small Micropodidæ (length about 90–100 mm.) with outer and middle toes inclined outward, inner toe freely reversible, toes naked, and tail forked for much less than half its length, the outermost rectrices not attenuated terminally.

Outermost (tenth) primary equal to or shorter than eighth, the ninth longest, the tenth short-acuminate terminally; tail less than half as long as wing, forked for much less than half its length, the lateral rectrices not attenuated terminally; tarsus much longer than anterior toes, rather stout, feathered in front; middle toe very slightly longer than lateral toes, the inner toe freely reversible; toes naked. (Unique among Micropodinae in character of sternum.<sup>a</sup>)

*Coloration (of American species).*—Above sooty blackish, lighter on head and neck; a white patch on each side of rump; throat and abdomen dull whitish, rest of under parts sooty.

*Nidification.*—Nest placed within a hollow spathe or attached to under side of a frond of a palm tree, composed of feathers and plant-down or other soft vegetable fiber (usually down of the *Bombax* or silk-cotton tree), firmly glued to its support by salivary secretion, the materials of the inner portion also densely felted together with the same substance.

#### KEY TO THE SUBSPECIES OF TACHORNIS PHÆNICOBIA.

- a. Back black, decidedly darker than pileum; sides nearly black, abruptly contrasted with white of abdomen; tail less deeply forked. (Jamaica; Haiti.)

*Tachornis phœnicobia phœnicobia* (p. 694).

- aa. Back dark sooty brown, little darker than pileum; sides dark sooty brown, fading gradually into (or at least not abruptly contrasted with) white of abdomen; tail more deeply forked. (Cuba.).....*Tachornis phœnicobia yradii* (p. 695).

<sup>a</sup> So far as known, all Micropodinae except *Tachornis* have the metasternum and carina sterni entire; but (according to Gosse, Birds of Jamaica, p. 59) *Tachornis phœnicobia* has not only two large metasternal foramina, but also has an opening through the anterior portion of the keel.



## TACHORNIS PHÆNICOBIA PHÆNICOBIA GOSSE.

## JAMAICAN PALM SWIFT.

*Adults (sexes alike).*—Pileum and hindneck deep or dark sooty brown (sepia to nearly clove brown); back, scapulars, median portion of upper rump, upper tail-coverts, and tail black or sooty black; rump (except median upper portion) white; wings sooty blackish, the inner webs of primaries paler, especially toward edges, the secondaries narrowly margined terminally with paler; a blackish space immediately in front of eye, with a less distinct (sometimes nearly obsolete) dull whitish space immediately beneath it; anterior portion of loreal region, suborbital region, auricular region, and sides of neck grayish brown (broccoli brown or hair brown); chin, throat, and chest dull white (the first sometimes more or less extensively grayish brown), the feathers grayish brown basally; sides dark sooty brown, this extending across upper breast as a more or less continuous narrow band; abdomen and lower median portion of breast dull white; under tail-coverts very dark sooty brown or sooty black; bill dull black; iris dark brown; feet dusky.

*Young.*—Not essentially different from adults, but white of under parts duller, especially that of abdominal area, and brown of sides and under tail-coverts paler.

*Adult male.*—Length (skins), 94–96 (95); wing, 100.5–102.5 (101.7); tail, 39–40 (39.3); exposed culmen, 4–4.5 (4.3); tarsus, 7–7.5 (7.2); middle toe, 4–5 (4.5).<sup>a</sup>

*Adult female.*—Length (skins), 94–100 (98); wing, 97–102 (100.7); tail, 38.5–44.5 (41.5); exposed culmen, 4–4.5 (4.4); tarsus, 7; middle toe, 4.5.<sup>b</sup>

Islands of Jamaica (Spanishtown; Kingston; St. Andrews; Hope Garden) and Haiti (near Jacmé; Santo Domingo).

*Tachornis phænicobia* GOSSE, Birds Jamaica, 1847, 58; Illustr. Birds Jamaica, 1849, pl. 9.—ALBRECHT, Journ. für Orn., 1862, 194 (Jamaica).—MARCH, Proc. Ac. Nat. Sci. Phila., 1863, 287 (Jamaica).

*T[achornis] phænicobia* NEWTON (E. and A.), Handb. Jam., 1881, 108.

*T[achornis] phœnicobius* HARTERT, Das Tierreich, Podarg., Caprim., Macropt., 1897, 82, part (Jamaica; Haiti).

[*Tachornis*] *phænicobius* SHARPE, Hand-list, ii, 1900, 94, part (Jamaica; Haiti).

[*Cypselus*] *phænicobia* BONAPARTE, Consp. Av., i, 1850, 66, part.

*Cypselus phænicobius* SCLATER, Proc. Zool. Soc. Lond., 1865, 604, part (Jamaica); Journ. für Orn., 1867, 125, part (Jamaica; monogr.).—CORY, Bull. Nutt. Orn. Club, vi, 1881, 153 (Haiti); Birds Haiti and San Dom., 1885, 87, pl. (22), fig. 12; Auk, iii, 1886, 344, part (Jamaica; Haiti); Birds West Ind., 1889, 139, part (Jamaica; Haiti).—SCOTT, Auk, ix, 1892, 276 (Jamaica).—FIELD, Auk, xi, 1894, 125 (Port Henderson, Jamaica).

<sup>a</sup> Three specimens, from Jamaica.

<sup>b</sup> Five specimens, but measurements of tarsus and middle toe from only one.

Three specimens from Haiti, but with sex undetermined, measure as follows: Wing, 99–103.5 (101.7); tail, 39–40 (39.5); exposed culmen, 4; tarsus, 7; middle toe, 4.5.

[*Cypselus*] *phaenicobius* GRAY, Hand-list, i, 1869, 64, no. 733, part (Jamaica).—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 94, part (Jamaica).—CORY, List Birds West Ind., 1885, 17, part (Jamaica; Haiti).

*Tachornis phaenicobius* CORY, Cat. West Ind. Birds, 1892, 12, 43, part (Jamaica; Haiti).

*Cypselus cayennensis*? (not *Hirundo cayanaensis* Gmelin) SALLÉ, Proc. Zool. Soc. Lond., 1857, 232 (Santo Domingo).

*Cypselus cayanaensis*? BRYANT, Proc. Bost. Soc. N. H., xi, 1867, 95 (Santo Domingo).

### TACHORNIS PHÆNICOBIA YRADII (Lembeye).

#### CUBAN PALM SWIFT.

Similar to *T. p. phaenicobia*, but tail more deeply forked, back averaging much more sooty (less black), color of sides averaging decidedly paler, and sides of head more extensively grayish brown; averaging larger.

*Adult male*.—Length (skins), 96–107 (102); wing, 94.5–106 (100.6); tail, 38–47 (42.5); exposed culmen, 4–5 (4.4); tarsus, 6.5–7 (6.8); middle toe, 4–4.5 (4.3).<sup>a</sup>

*Adult female*.—Length (skins), 102–113 (108); wing, 98.5–110 (106); tail, 41–48 (45.9); exposed culmen, 4.5–5 (4.6); tarsus, 6.5–7.5 (7); middle toe, 4–4.5 (4.2).<sup>a</sup>

Island of Cuba (Monte Verde; Pinár del Rio; Guánajay; Batabano; Holquín; San Pablo: Trinidad).

*Cypselus yradii* LEMBEYE, Aves de la Isla de Cuba, 1850, 50, pl. 7, fig. 4.

*Tachornis iradii* GUNDLACH, Journ. für Orn., 1860, 268; 1874, 116 (habits); Repert.

Fisico-Nat. Cuba, 1866, 95.—ALBRECHT, Journ. für Orn., 1861, 208.

[*Tachornis*] *iradii* GUNDLACH, Journ. für Orn., 1861, 330.

*Tachornis yradii* (typographical error) BREWER, Proc. Bost. Soc. N. H., vii, 1860, 306.

*Tachornis phaenicobius* (not *T. phaenicobia* Gosse) CABANIS, Journ. für Orn., 1856, 5.—GUNDLACH, Journ. für Orn., 1861, 411.—CORY, Cat. West Ind. Birds, 1892, 12, 43, part (Cuba).

[*Tachornis*] *phaenicobius* SHARPE, Hand-list, ii, 1900, 94, part.

[*Tachornis*] *phaenicobius* HARTERT, Das Tierreich, Podarg., Caprim., Macropt., 1897, 82, part (Cuba).

*Cypselus phaenicobius* SCLATER, Proc. Zool. Soc. Lond., 1865, 604, part (Cuba); Journ. für Orn., 1867, 125, part (Cuba; monogr.).—CORY, Auk, iii, 1886, 344, part (Cuba); viii, 1891, 294 (Cuba); Birds West Ind., 1889, 139, part (Cuba).

[*Cypselus*] *phaenicobius* GRAY, Hand-list, i, 1869, 64, no. 733, part (Cuba).—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 94, part (Cuba).—CORY, List Birds West Ind., 1885, 17, part (Cuba).

*Tachornis phaenicobia* CHAPMAN, Bull. Am. Mus. N. H., iv, 1892, 302 (San Pablo, s. Cuba).

[*Cypselus*] *phaenicobia* BONAPARTE, Consp. Av., i, 1850, 66, part.

*Cypselus phaenicobius* MENEGAUX, Rev. Franç. d'Orn., no. 2, 1909, 26 (Guanatanamo and San Carlos, Cuba).

*Tachornis phaenicobius* GUNDLACH, Orn. Cubana, ed. 1895, 98.

<sup>a</sup> Eight specimens.

## Genus STREPTOPROCNE Oberholser.

*Streptoprocne* <sup>a</sup> OBERHOLSER, Proc. Biol. Soc. Wash., xix, May 1, 1906, 69, in text.  
(Type, *Hirundo zonaris* Shaw.)

Very large Chæturine Swifts (wing 180–235 mm.) with the hallux more than half as long as inner toe, tarsus longer than middle toe with claw, lateral toes scarcely shorter than middle toe, shafts of rectrices very rigid and more or less produced terminally, the coloration plain blackish or sooty with a white collar, at least across hindneck.

Nostrils elliptical, nearly parallel, for the greater part (sometimes wholly) anterior to the latero-frontal antia; distance from tips of longest secondaries to that of longest primary a little less than two-thirds the total length of wing; tenth (outermost) primary longest; tail about one-third as long as wing, emarginate (*S. zonaris*) or truncate (*S. semicollaris*), the rectrices firm, with very rigid and more or less extruded shafts; tarsus longer than middle toe with claw; middle and outer toes equal in length, the inner toe very slightly shorter; hallux (without claw) more than half as long as inner toe (without claw).<sup>b</sup>

*Coloration*.—Plain blackish or sooty, the adults with a white collar, at least across hindneck.

<sup>a</sup> From στρεπτός, torquis, and πρόκνη, Progne. (Oberholser.)

<sup>b</sup> A peculiarity in the myology of *Streptoprocne* is thus described by Dr. F. A. Lucas in *The Auk*, xvi, 1899, 97:

It might be supposed that the anatomical possibilities of so small a group as the Swifts had been exhausted, but that this is not the case is shown by an examination of *Hemiprocne zonaris*, for which I am indebted to Mr. C. B. Taylor, of Jamaica. The cranium is typically cypseline, so are the wing muscles, although the deltoid is small, as in the majority of the true Swifts, there being an apparent tendency to reduction in the number of wing muscles in birds which fly, so to speak, by main strength and in which the humerus is reduced in length. The leg muscles are curious first by the absence of the *peroneus longus*, a muscle which runs from the head of the tibia to the upper end of the tarsus in Passeres, and second by the great simplification of the deep plantar tendons. In the Passeres, as we all know, one tendon flexes the first digit of the foot, while another with three branches flexes the three front toes. In the Tree Swifts, Macropterygidæ, the tendon of the hind toe is attached by a short slip to the branch running to the fourth digit. In the other Swifts so far examined the two main tendons are completely fused for some distance although worked by two muscles. Now in *Hemiprocne* [i. e., *Streptoprocne*] while the muscle which ordinarily works the front toes, the *flexor perforans*, is present, it has no separate tendon, but is attached to the muscle of the first digit, *flexor longus hallucis*, and is diverted to the work of pulling on its tendon, which as usual runs up over the outer side of the belly of the muscle. Below this single tendon sends off four slips, one to each digit, thus presenting the simplest condition possible and literally realizing Gadow's statement that the *flexor longus hallucis* is really a common flexor of all digits. If a good generic character is needed for *Hemiprocne* [*Streptoprocne*], here it is.



*Nidification*.—Nest in cavities of rocks, composed of mud and moss.<sup>a</sup>

*Range*.—Southern Mexico to southern Brazil, Bolivia, and Peru; Cuba; Haiti; Jamaica; Grenada. (Three species.)

KEY TO THE SPECIES AND SUBSPECIES OF STREPTOPROCNE.

- a. Tail emarginate; under parts with more or less of white; smaller (wing not more than 204 mm.).
- b. Under parts black with a white band across chest. (*Adults*.)
- c. White collar continuous around neck. (*Streptoprocne zonaris*.)
- d. Forehead sooty black, scarcely if at all different from color of crown.
  - e. General color less intensely black (more sooty); larger (wing 214 mm.). (Southern Brazil and northern Argentina.)
  - Streptoprocne zonaris zonaris* (extralimital).<sup>b</sup>
  - ee. General color deep or intense black; smaller (wing 188–207 mm.). (Northern South America to Costa Rica.)
  - Streptoprocne zonaris albicincta* (p. 697).
- dd. Forehead always sooty gray or grayish brown, distinctly different from black of crown.
  - e. No white line on sides of forehead. (Southern Mexico to Guatemala and British Honduras.) . . . *Streptoprocne zonaris mexicana*, adults (p. 700).
  - ee. A narrow white line along side of forehead. (Jamaica; Cuba.)
  - Streptoprocne zonaris pallidifrons*, adults (p. 701).
- cc. White collar interrupted on sides of neck (confined to hindneck and chest). (Southeastern Brazil.) . . . *Streptoprocne biscutata* (extralimital).<sup>c</sup>
- bb. Under parts sooty with whitish terminal margins to feathers.
  - Streptoprocne zonaris mexicana*, young (p. 700).
- aa. Tail even; under parts without any white (uniform sooty); larger (wing 228–233 mm.). (Mexico.) . . . *Streptoprocne semicollaris* (p. 702).

STREPTOPROCNE ZONARIS ALBICINCTA (Cabanis).

COLOMBIAN COLLARED SWIFT.

Similar to *S. z. zonaris*, of Brazil, but decidedly smaller and coloration much blacker.

*Adults (sexes alike)*.—Pileum black, usually slightly (but rarely distinctly, never conspicuously) more sooty on forehead; sides of

<sup>a</sup> Salmon, Proc. Zool. Soc. Lond., 1879, 531.

<sup>b</sup> *Hirundo zonaris* Shaw, in Miller's Cimel. Phys., 1796, 100, pl. 55 (type locality not stated, but is assumed to be Brazil).—*H[emiprocne] zonaris* Cabanis and Heine, Mus. Hein., ii, 1860, 83 (Brazil).—*Chactura zonaris* Slater, Cat. Am. Birds, 1862, 282, part (s. Brazil).—*Hirundo albicollis* Vieillot, Nouv. Dict. d'Hist. Nat., xiv, 1817, 524 (Brazil).—*Hirundo collaris* Maximilian, Reise Bras., i, 1820, 75 (Rio de Janeiro, Brazil).—*Cypselus collaris* Temminck, Pl. Col., 33d livr., Jan., 1821, pl. 195; Maximilian, Beitr. Nat. Bras., iii, 1830, 344.—*Acanthylis collaris* Burmeister, Syst. Ueb. Th. Bras., i, pt. ii, 1856, 364.—*Ch[actura] zonaris (typica)* Hartert, Das Tierreich, Podarg., Caprim., Macropt., 1897, 74, part.—*Streptoprocne zonaris zonaris* Oberholser, Proc. Biol. Soc. Wash., xix, May 1, 1906, 69, part.

<sup>c</sup> *Chactura biscutata* Slater, Proc. Zool. Soc. Lond., 1865, 609, pl. 34 (Ypanema, s. e. Brazil; coll. P. L. Slater; ex *Cypselus biscutata* Natterer, manuscript); Hartert, Cat. Birds Brit. Mus., xvi, 1892, 479.—*[Hemiprocne] biscutata* Slater and Salvin, Nom. Av. Neotr., 1873, 95.—*Streptoprocne biscutata* Oberholser, Proc. Biol. Soc. Wash., May 1, 1906, 69.

head, chin, and throat plain sooty black or very dark sooty; a conspicuous white collar completely encircling neck, this broadest below, where usually encroaching slightly on median portion of lower throat, the feathers all sooty blackish or dark sooty basally; rest of plumage black, the back, scapulars, rump, and upper tail-coverts slightly glossed with bluish, the wings and tail more grayish black, paler (more grayish sooty) on inner webs of remiges and rectrices; bill and feet black; iris dark brown.

*Adult male*.—Length (skins), 185–200 (188.3); wing, 188–205 (196.5); tail, 62.5–72 (67.5); exposed culmen, 9–10 (9.5); tarsus, 19–22 (20.9); middle toe, 13.5–15.5 (14.6).<sup>a</sup>

*Adult female*.—Length (skins), 180–194 (189); wing, 185.5–207 (197.6); tail, 63–75 (69.4); exposed culmen, 9–10.5 (9.9); tarsus, 19.5–22 (21.1); middle toe, 14.5–15.5 (14.9).<sup>b</sup>

Costa Rica (Peralta; Tucurríqui; San Pedro; Volcán de Irazú; La Palma de San José; Escazú; Boruca; Paso Real de Térraba) and southward through Panamá (Chitra; Calovévora), Colombia (Bogotá; Sierra Nevada de Santa Marta; La Concepción, Santa Marta; Antioquía; Ambalema; Bucaramanga) and Ecuador (Guayaquil; Quijos; Chimbo; Chaupi; Paramo del Illiniza; Volcán de Pichincha, 13,000–14,000 feet) to Peru (Lima; Cuzco; Cosnipata; Chyavetas; Chanchamayo; Huallaga; La Mercéd; Santa Ana; Huaynapata), Trinidad, Grenada, and British Guiana (Roraima).

*Hemiprocne albicincta* CABANIS, Journ. für Orn., 1862, 165, part (Guiana).

*Acanthylis collaris* (not *Hirundo collaris* Maximilian) Cabanis, in Schomburgk's Reise Brit. Guiana, iii, 1848, 709.—LÉOTAUD, Ois. Trinidad, 1866, 83.

*Hemiprocne collaris* CHAPMAN, Bull. Am. Mus. N. H., vi, 1894, 58 (Trinidad).

| <sup>a</sup> Ten specimens.                |       | <sup>b</sup> Eight specimens. |                         |         |                |
|--------------------------------------------|-------|-------------------------------|-------------------------|---------|----------------|
| Locality.                                  | Wing. | Tail.                         | Ex-<br>posed<br>culmen. | Tarsus. | Middle<br>toe. |
| MALES.                                     |       |                               |                         |         |                |
| Six adult males from Costa Rica.....       | 195.9 | 68.1                          | 9.7                     | 21.2    | 14.8           |
| One adult male from Panamá (Chiriquí)..... | 195   | 67.5                          | 9.5                     | 20.5    | 14.5           |
| Three adult males from Colombia.....       | 198.3 | 66.8                          | 9.2                     | 20.2    | 14.2           |
| FEMALES.                                   |       |                               |                         |         |                |
| Six adult females from Costa Rica.....     | 200.5 | 70.9                          | 9.7                     | 21.2    | 14.9           |
| One adult female from Colombia.....        | 192   | 66.5                          | 10.5                    | 22      | 15             |
| One adult female from Peru.....            | 185   | 63                            | 10.5                    | 19.5    | 14.5           |

I have not seen specimens from the type locality of *Hemiprocne albicincta* Cabanis (Guiana) or contiguous territory, and the form here characterized as *Streptoprocne zonaris albicincta* may possibly not be the same. In this case the name *Streptoprocne zonaris minor* would have to be used instead, the type locality of *Hemiprocne minor* Lawrence being central Colombia (Bogotá).

[*Chætura*] *albicincta* SHARPE, Hand-list, ii, 1900, 91.

*Hemiprocne zonaris* var. *albicincta* PELZELN, Ibis, 1875, 330 ("Spanish Guiana;" crit.).

*Chætura zonaris* (Shaw), *α. albicincta* (Cab.) HARTERT, Cat. Birds Brit. Mus., xvi, 1892, p. xiv.

[*Chætura zonaris*] Subsp. *α. Chætura albicincta* HARTERT, Cat. Birds Brit. Mus., xvi, 1892, 478 (Guiana).

*Ch[ætura] zonaris albicincta* HARTERT, Das Tierreich, Podarg., Caprim., Macropt., 1897, 74.

*Chaetura zonaris albicincta* HELLMAYR., Novit. Zool., xiii, 1906, 36 (Chaguanas, Trinidad; crit.).—BERLEPSCH, Novit. Zool., xv, 1908, 268, footnote (Brit. Guiana).

*Streptoprocne zonaris albicincta* OBERHOLSER, Proc. Biol. Soc. Wash., xix, May 1, 1906, 69.

*S[treptoprocne] z[onaris] albicincta* RIDGWAY, Proc. Biol. Soc. Wash., xxiii, 1910, 53, in text.

*Acanthylis albicollis* (not *Hirundo albicollis* Vieillot) SCLATER, Proc. Zool. Soc. Lond., 1854, 110 (Quijos, Ecuador); 1858, 60 (e. Ecuador).

*Hemiprocne zonaris* (not *Hirundo zonaris* Shaw) CABANIS, Journ. für Orn., 1862, 165 (Costa Rica; crit.).—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1879, 531 (Antioquia, Colombia; descr. nest and eggs).—BERLEPSCH and TACZANOWSKI, Proc. Zool. Soc. Lond., 1883, 569 (Guayaquil and Chimbo, w. Ecuador).—TACZANOWSKI, Orn. du Pérou, i, 1884, 231.—ZELEDÓN, Anal. Mus. Nac. Costa Rica, i, 1887, 120 (La Palma de San José).—WELLS, Proc. U. S. Nat. Mus., ix, 1887, 620 (Grenada).—BERLEPSCH and STOLZMANN, Proc. Zool. Soc. Lond., 1892, 398 (Lima, Peru).—BANGS, Proc. Biol. Soc. Wash., xii, 1898, 158 (Pueblo Viejo, Santa Marta, Colombia).—STONE, Proc. Ac. Nat. Sci. Phila., 1899, 305 (near Ambalema, Colombia).—SALVADORI and FESTA, Boll. Mus. Zool., etc., Torino, xv, 1900, 12 (Chaupi, Paramos del Illiniza, etc., centr. Ecuador; crit.).—CLARK, Proc. Bost. Soc. N. H., xxxii, 1905, 273 (Grenada).

[*Hemiprocne*] *zonaris* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 95, part.

*Hemiprocne zonaris*? BOUCARD, Proc. Zool. Soc. Lond., 1878, 67 (Volcán de Irazú, Costa Rica).

*Chaetura zonaris* SALVIN, Proc. Zool. Soc. Lond., 1870, 204 (Chitra and Calovévora, Panamá); Ibis, 1885, 436 (Roraima, 3,500 ft., Brit. Guiana).—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1867, 752 (Huallaga, e. Peru); 1873, 186 (Cosnipata, Peru), 289 (Chyavetas, e. Peru).—BERLEPSCH, Journ. für Orn., 1884, 313 (Bucaramanga, Colombia; crit.).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1893, 373, part (Costa Rican, Panaman and Colombian localities and references; Grenada).—HARTERT, Novit. Zool., v, 1898, 496 (Volcán de Pichincha, 13,000–14,000 ft., n. w. Ecuador).—BERLEPSCH and STOLZMANN, Proc. Zool. Soc. Lond., 1902, 29 (La Mercéd, centr. Peru); Ornith., 1906, 96 (Santa Ana, Peru), 122 (Huaynapata, Cuzco, Peru).—GOODFELLOW, Ibis, 1902, 208 (eastern Andes of Ecuador, 10,000–15,000 ft.; habits).

*Ch[ætura] zonaris (typica)* HARTERT, Das Tierreich, Podarg., Caprim., Macropt., 1897, 74, part.

[*Chætura*] *zonaris* SHARPE, Hand-list, ii, 1900, 91, part.

*Streptoprocne zonaris zonaris* OBERHOLSER, Proc. Biol. Soc. Wash., xix, May 1, 1906, 69, part.—BANGS, Auk, xxiv, 1907, 295 (Pozo del Rio Grande, s. w. Costa Rica).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 506 (Costa Rica; habits).

*Hemiprocne minor* LAWRENCE, Ann. N. Y. Acad. Sci., ii, 1882, 11 (Bogotá, Colombia; coll. G. N. Lawrence).—REICHENOW and SCHALOW, Journ. für Orn., 1884, 382 (reprint of orig. descr.).



## STREPTOPROCNE ZONARIS MEXICANA Ridgway.

## MEXICAN COLLARED SWIFT.

Similar to *S. z. albicincta*, but averaging decidedly larger, general color much duller (less bluish) black, and forehead always distinctly grayish sooty; similar also to *S. z. zonaris*,<sup>a</sup> but averaging smaller and coloration less uniform, the forehead and chin always distinctly paler than rest of head.

*Adults (sexes alike).*—General color plain black or sooty black above, slightly more sooty below and decidedly more so on forehead, chin, and throat, interrupted by a conspicuous collar of white (this broadest on chest), the feathers of this white collar dark sooty brown or dusky basally; bill black; iris dark brown; legs and feet dusky (more or less livid in life?).

*Immature.*—Similar to adults, but white collar more or less broken by larger dusky central areas to feathers (especially on chest), and (in younger specimens) feathers of chin and upper throat streaked, those of lower throat tipped with whitish, and those of breast and abdomen and marginal under wing-coverts terminally margined with whitish.

*Young.*—Much duller in color than adults, the under parts grayish sooty anteriorly, dark sooty posteriorly; white collar developed only on hindneck (where feathers are rather narrowly tipped with white), the feathers of chest very narrowly margined terminally with white; otherwise like the immature stage, described above.

*Adult male.*—Length (skins), 183–225 (206.5); wing, 200–215 (206.4); tail, 66.5–81.5 (75.6); exposed culmen, 8.5–10.5 (9.6); tarsus, 20.5–24 (22.3); middle toe, 14.5–16.5 (15.2).<sup>a</sup>

*Adult female.*—Length (skins), 187–222 (207); wing, 194.5–206.5 (200.5); tail, 62–79 (72); exposed culmen, 9–10.5 (9.8); tarsus, 20.5–24 (22); middle toe, 14–16 (15).<sup>b</sup>

<sup>a</sup> Of southern Brazil and Argentina; see p. 697.

<sup>b</sup> Fourteen specimens.

| Locality.                                                   | Wing. | Tail. | Ex-<br>posed<br>culmen. | Tarsus. | Middle<br>toe. |
|-------------------------------------------------------------|-------|-------|-------------------------|---------|----------------|
| MALES.                                                      |       |       |                         |         |                |
| Ten adult males from Mexico.....                            | 205.5 | 75.6  | 9.5                     | 22.5    | 15.2           |
| Two adult males from Guatemala.....                         | 211.7 | 79    | 10                      | 23      | 15.2           |
| Two adult males from British Honduras.....                  | 205.5 | 72.2  | 9.7                     | 22      | 15.2           |
| FEMALES.                                                    |       |       |                         |         |                |
| Ten adult females from Mexico.....                          | 200.3 | 73.1  | 9.7                     | 22.8    | 15.2           |
| Three adult females from Guatemala (2) and Chiapas (1)..... | 202.5 | 71.5  | 10                      | 21.5    | 14.7           |
| One adult female from British Honduras.....                 | 194.5 | 62    | 10                      | 20.5    | 15             |

Southern Mexico, in States of Vera Cruz (Córdova; Rio Seco, near Córdova; Miradór; Uvero; Téxolo; Túxtepec), Guerrero (Papayo), Oaxaca (Villa Alta; Cacoprieto; Santa Efigénia), and Chiapas (Chicharras), and southward through highlands of Guatemala (Dueñas; Tecpám; Retalhuleu; Patzicia; Calderas; San José; Los Amates, etc.) to British Honduras (Toledo District).

*Hemiprocne zonalis* (not *Hirundo zonalis* Shaw) SCLATER and SALVIN, Ibis, 1859, 125 (Guatemala).—SALVIN and SCLATER, Ibis, 1860, 37 (Dueñas, Guatemala; crit.).

*Chætura zonalis* SCLATER, Proc. Zool. Soc. Lond., 1863, 99, part (monogr.; Guatemala); 1865, 609, part (Guatemala; monogr.).—SUMICHRIST, Mem. Bost. Soc. N. H., i, 1869, 562 (highlands of Vera Cruz).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1893, 373, part (Uvero, Córdova, and Miradór, Vera Cruz; Villa Alta, Santa Efigénia, and Cacoprieto, Oaxaca; Retalhuleu, Patzicia, Calderas, Dueñas, and San José, Guatemala).

[*Chætura*] *zonalis* SHARPE, Hand-list, ii, 1900, 91, part (Mexico).

[*Hemiprocne zonalis*] SCLATER and SALVIN, Nom. Av. Neotr., 1873, 95, part (Mexico).—HEINE and REICHENOW, Nom. Mus. Hein. Orn., 1890, 90, part (Mexico).

*Streptoprocne zonalis zonalis* OBERHOLSER, Proc. Biol. Soc. Wash., xix, May 1, 1906, 69, part.

*Streptoprocne zonalis* DEARBORN, Pub. 125 Field Mus. N. H., 1907, 95 (Los Amates, bet. Lake Atitlán and Tecpám, and above Tecpám, Guatemala; descr. nesting place).

*Ch[ætura] zonalis (typica)* HARTERT, Das Tierreich, Podarg., Caprim., Macropt., 1897, 74, part.

*Streptoprocne zonalis mexicana* RIDGWAY, Proc. Biol. Soc. Wash., xxiii, Apr. 19, 1910, 53 (Rio Seco, near Córdova, Vera Cruz, e. Mexico; coll. U. S. Nat Mus.).

### STREPTOPROCNE ZONARIS PALLIDIFRONS (Hartert).

#### ANTILLEAN COLLARED SWIFT.

Similar to *S. z. mexicana*, but smaller, the forehead and chin (sometimes throat also) paler, and with a more or less conspicuous narrow supraloral streak of whitish.

*Adult male*.—Length (skins), 178–195 (186); wing, 194–212 (201.6); tail, 64.5–74 (70.4); exposed culmen, 8.5–10 (9.2); tarsus, 18.5–20 (19.2); middle toe, 13–15 (14).<sup>a</sup>

*Adult female*.—Length (skin), 190; wing, 195–196.5 (195.7); tail, 68.5–71 (69.7); exposed culmen, 10; tarsus, 19–19.5 (19.2); middle toe, 13.5–14 (13.7).<sup>b</sup>

Islands of Jamaica, Haiti, and Cuba, Greater Antilles. Jamaica: Belle Vista, St. Andrews; Moneague; Cinchona. Cuba: Monte Verde; San Juan; Nueva Gerona, Isle of Pines.

*Acanthylis collaris*? (not *Hirundo collaris* Maximilian) GOSSE, Birds Jamaica, 1847, 51; Illustr. Birds Jamaica, 1849, pl. 8.

*Chætura collaris* BREWER, Proc. Bost. Soc. N. H., vii, 1860, 306 (Cuba).—MARCH, Proc. Ac. Nat. Sci. Phila., 1862, 286 (Jamaica).

<sup>a</sup> Five specimens.

<sup>b</sup> Two specimens.

- Cypcelus collaris* ALBRECHT, Journ. für Orn., 1861, 206 (Cuba).  
*Nephocastes collaris* GUNDLACH, Journ. für Orn., 1861, 330 (Cuba); 1862, 177 (Cuba); 1874, 114 (Cuba; habits); Contr. Orn. Cuba, 1876, 83.  
*Chætura zonaris* (not *Hirundo zonaris* Shaw) SCLATER, Proc. Zool. Soc. Lond., 1861, 79 (Jamaica; crit.); 1863, 99, part (monogr.; Jamaica; Haiti); 1865, 609, part (monogr.).—ALBRECHT, Journ. für Orn., 1862, 201 (Jamaica).—CORY, Auk, xii, 1895, 279 (Santo Domingo).—CHERRIE, Contr. Orn. San Dom., 1896, 18 (Santo Domingo City).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1893, 373, part (Greater Antilles).—MENEGAUX, Rev. Franç. d'Orn., no. 2, 1909, 26 (Guantanamo and San Carlos, Cuba).  
*Hemiprocne zonaris* CORY, Auk, iii, 1886, 346; Birds West Ind., 1889, 141.—CHAPMAN, Bull. Am. Mus. N. H., iv, 1892, 302 (San Juan, s. Cuba).—SCOTT, Auk, ix, 1892, 276 (Jamaica; habits).—FIELD, Auk, xi, 1894, 125 (Port Henderson, Jamaica).  
*A[canthylis] zonaris* NEWTON (E. and A.), Handb. Jamaica, 1881, 108.  
*Chætura zonaris pallidifrons* HARTERT, Ibis, July, 1896, 368 (Jamaica; coll. Tring Mus.).  
*Ch[ætura] zonaris pallidifrons* HARTERT, Das Tierreich, Podarg., Caprim., Macropt., 1897, 74.  
*Hemiprocne zonaria* GUNDLACH, Orn. Cubana, ed. 1895, 97.  
*[Chætura] pallidifrons* SHARPE, Hand-list, ii, 1900, 91 (Jamaica; Haiti).  
*Hemiprocna zonaris pallidifrons* BANGS and ZAPPEY, Am. Nat., xxxix, April, 1905, 203 (Nueva Gerona, Isle of Pines).  
*Streptoprocne zonaris pallidifrons* OBERHOLSER, Proc. Biol. Soc. Wash., xix, May 1, 1906, 69.

### STREPTOPROCNE SEMICOLLARIS (Saussure).

#### WHITE-NAPED SWIFT.

*Adult male*.—Head, neck, and chest dark grayish sooty, slightly paler on forehead and chin (especially the former), the feathers of chin and throat with darker shafts; a white band across hindneck, the feathers of which are abruptly dark sooty basally; rest of plumage plain very dark grayish sooty, the back, scapulars, rump, and upper tail-coverts more blackish and faintly glossed with bronze-greenish; bill brownish black; iris dark brown; toes brownish black, the tarsi more brownish (in dried skin); length (skin), 238; wing, 228; tail, 73; exposed culmen, 12; tarsus, 27; middle toe, 19.5.<sup>a</sup>

South-central Mexico, in States of Mexico (San Joaquín, near City of Mexico) and Hidalgo (Irolo)

- Acanthylis semicollaris* DE SAUSSURE, Rev. et Mag. de Zool., iii, March, 1859, 117 (San Joaquín, near City of Mexico).  
*Chætura semicollaris* SCLATER, Cat. Am. Birds, 1862, 282; Proc. Zool. Soc. Lond., 1863, 99 (monogr.); 1865, 609 (monogr.); Journ. für Orn., 1867, 130.—SCLATER and SALVIN, Exotic Orn., pt. vii, 1866, 103, pl. 52.—SUMICHRIST, Mem. Bost. Soc. N. H., i, 1869, 562.—HERRERA, La Naturaleza, (2), i, 1888 (Apunt. de Orn., p. 15).—HARTERT, Cat. Birds Brit. Mus., xvi, 1892, 479.—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1893, 374.  
*[Chætura] semicollaris* GRAY, Hand-list, i, 1869, 69, no. 781.—SHARPE, Hand-list, ii, 1900, 92.

<sup>a</sup> One specimen.



*Ch[ætura] semicollaris* HARTERT, Das Tierreich, Podarg., Caprim., Macropt., 1897, 74.

[*Hemiprocne*] *semicollaris* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 95.—  
HEINE and REICHENOW, Nom. Mus. Hein. Orn., 1890, 190.

*Hemiprocne semicollaris* SUMICHRAST, La Naturaleza, v, 1881, 250.

*Streptoprocne semicollaris* OBERHOLSER, Proc. Biol. Soc. Wash., xix, May 1, 1906, 69.

#### Genus NEPHÆCETES Baird.

*Nephocætes* BAIRD, Rep. Pacific R. R. Surv., ix, 1858, 142. (Type, *Hirundo nigra* Gmelin.)

*Nephocætes* (emendation) BAIRD, Rep. Pacific R. R. Surv., ix, 1858, pp. xxix, 922.

*Nephæcetes* (emendation) SCLATER, Proc. Zool. Soc. Lond., 1859, 236.

Medium-sized Chæturine Swifts (length about 135–168 mm.) with tarsus longer than middle toe with claw, hallux more than half as long as inner toe, and tail decidedly to deeply emarginate, with rectrices soft and with normal shafts.

Nostrils elliptical or narrowly oval, nearly parallel, for the greater part posterior to the latero-frontal antiæ; distance from tips of longest secondaries to that of longest primary decidedly less than two-thirds the total length of wing; tenth (outermost) primary longest; tail nearly two-fifths as long as wing, decidedly emarginate, the rectrices rather soft, with shafts normal (not rigid, nor with extruded tip); tarsus longer than middle toe with claw; outer toe as long as middle toe, the inner slightly shorter; hallux (without claw) more than half as long as inner toe (without claw); feet relatively rather weak or slender.<sup>a</sup>

*Coloration*.—Mostly plain dark sooty, the sides of forehead more or less hoary or whitish; adult females with feathers of posterior under parts more or less distinctly tipped with whitish.

*Nidification*.—Nest in recesses among rocks <sup>b</sup> or about buildings, composed of straw, feathers, leaves, bits of paper, etc., loosely put together and not held together by salivary secretion.<sup>c</sup>

*Range*.—British Columbia and Montana to Costa Rica; West Indies (Cuba, Haiti, Jamaica, Guadeloupe, Martinique, and St. Vincent); British Guiana. (Monotypic.)

<sup>a</sup> *Nephæcetes* differs from all other North American genera of Swifts, at least, in having seven (instead of six) pairs of complete ribs and in having the vomer not expanded distally. (See Lucas, Auk, x, 1893, 365, 366.)

<sup>b</sup> See Vrooman, Condor, vii, 1905, 176, 177, where the eggs are stated to be laid on bare earth behind a tussock of grass, on a shelf or pocket of a cliff overhanging the sea. Doubts have, however, been expressed as to correct identification in this case. That *N. niger borealis* does nest among rocks, however, I have reason to believe from having seen a large colony at a cliff facing the Carson River near Fort Churchill, Nevada, in June, 1868. (See Orn. 40th Parallel, 1877, 565, 566.)

<sup>c</sup> See Gormley, Auk, v, 1888, 424, 425.

KEY TO THE SUBSPECIES OF *NEPHCETES NIGER*.

*a.* General color decidedly grayish. (Haiti; Cuba?) *Nephœcetes niger niger* (p. 704).  
*aa.* General color distinctly blackish or dark sooty.

*b.* Smaller (wing averaging 154.5 in male, 150 in female) but tail longer (averaging 66 in male, 58.5 in female); female with white tips to feathers of posterior under parts much less distinct. (Jamaica; Porto Rico?; Dominica?; Guadeloupe?; St. Vincent?; Martinique?; British Guiana?)

*Nephœcetes niger jamaicensis* (p. 705).

*bb.* Larger (wing averaging 159 or more in male, more than 157 in female) but tail shorter (averaging not more than 61 in male, less than 52 in female).

*c.* Larger (wing averaging 165.8 in male, 162 in female), coloration slightly paler; female with white tips to feathers of posterior under parts averaging narrower. (British Columbia to southern Mexico.)

*Nephœcetes niger borealis* (p. 707).

*cc.* Smaller (wing averaging 159 in male, 157.1 in female); coloration slightly darker; female with white tips to feathers of posterior under parts averaging broader. (Costa Rica.).....*Nephœcetes niger costaricensis* (p. 710).

**NEPHCETES NIGER NIGER** (Gmelin).**BLACK SWIFT.**

*Adult male.*<sup>a</sup>—Pileum and hindneck deep grayish brown or sooty, passing into sooty blackish on back and other upper parts (the wings and tail very faintly glossed with bluish); chin and throat much lighter grayish brown passing into much darker sooty on under parts of body and under tail-coverts (the color slightly darker than that of pileum); feathers of forehead and crown narrowly margined at tip with grayish white, these whitish tips much broader on sides of forehead, blending on edge into a distinct whitish area bordering the upper edge of the velvety black lores; marginal under wing-coverts very narrowly margined terminally with pale grayish; bill black; iris dark brown; legs and feet dusky (in dried skin); length (skins), 155–158 (156.5); wing, 151–156 (153.5); tail, 62–63 (62.5) (forked for 12); exposed culmen, 6–7 (6.5); tarsus, 12; middle toe, 8.5–9 (8.7).<sup>b</sup>

*Adult female.*—Similar to the adult male but tail less emarginate (nearly truncate), under parts paler, especially under parts of body and under tail-coverts, which are nearly concolor with the throat, the general color of the under parts being a clear sooty brownish gray or grayish brown; in some specimens, the feathers of lower abdomen indistinctly tipped with whitish; length (skins), 138–156

<sup>a</sup> Described from a Cuban specimen, no adult male from Santo Domingo or Haiti being available. This Cuban specimen is much paler in coloration than even adult females of the Jamaican form, and, though slightly darker (especially on the under parts) than adult females from Santo Domingo I believe will be found referable to the same form.

<sup>b</sup> Two specimens.

(149); wing, 149–157.5 (152.4); tail, 53–58.5 (56.6); exposed culmen, 6–6.5 (6.1); tarsus, 12–13 (12.6); middle toe, 9–9.5 (9.1).<sup>a</sup>

Islands of Haiti and Cuba, Greater Antilles.<sup>b</sup>

[*Hirundo*] *nigra* GMELIN, Syst. Nat., i, pt. ii, 1789, 1025 (based on *Martinet de Saint-Domingue*, *Hirundo apus dominicensis* Brisson, Orn., ii, 514, pl. 46, fig. 2; *Le petit Martinet noir* Buffon, Hist. Nat. Ois., vi, 668.)—LATHAM, Index Orn., i, 1790, 577.

[*Cypselus*] *nigra* BONAPARTE, Consp. Av., i, 1850, 66, part.

*Cypselus niger* (not of Gosse) GUNDLACH and LAWRENCE, Ann. Lyc. N. Y., vi, 1858, 268 (Cuba).—BREWER, Proc. Bost. Soc. N. H., vii, 1860, 306 (Cuba).—ALBRECHT, Journ. für Orn., 1861, 207 (Cuba).

*Nephocætes niger* BAIRD, Rep. Pacific R. R. Surv., ix, 1858, 142, part (Cuba).—GUNDLACH, Journ. für Orn., 1862, 177 (Cuba); 1874, 115 (Cuba).

*Nephæcetes niger* BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 429, part (Cuba).—CORY, Birds Haiti and San Dom., 1885, 88, pl. (22), fig. 11.—CHRISTY, Ibis, 1897, 329 (La Vega, Santo Domingo; habits).

[*Nephocætes*] *niger* GUNDLACH, Journ. für Orn., 1861, 330 (Cuba).

[*Nephæcetes*] *niger* CORY, List Birds West Ind., 1885, 17, part.

[*Chætura*] *niger* GRAY, Hand-list, i, 1869, 68, no. 784, part (Cuba).

*Nechopætes* (typographical error) *niger* GUNDLACH, Repert. Fisico-Nat. Cuba, i, 1866, 281.

*Cypseloides niger* SCLATER, Proc. Zool. Soc. Lond., 1865, 615, part (Cuba; monogr.); Journ. für Orn., 1867, 138.—CORY, Auk, iii, 1886, 345, part (Santo Domingo); Birds West Ind., 1889, 140, part (Santo Domingo); Cat. West Ind. Birds, 1892, 105, part (Cuba; Haiti).—CHAPMAN, Bull. Am. Mus. N. H., iv, 1892, 301 (San Juan, s. Cuba).—HARTERT, Cat. Birds Brit. Mus., xvi, 1892, 494, part (San Cristobal, Cuba; La Vega, Santo Domingo).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1893, 379, part (in synonymy).—GUNDLACH, Orn. Cubana, ed. 1895, 98.—MENEGAUX, Rev. Franç. d'Orn., no. 2, 1909, 26 (Figuabas, e. Cuba).

*C[ypseloides] niger (typicus)* HARTERT, Das Tierreich, Podarg., Caprim., Macropt., 1897, 79, part.

[*Cypseloides*] *niger* SHARPE, Hand-list, ii, 1900, 93, part.

*C[ypseloides] n[iger] niger* RIDGWAY, Proc. Biol. Soc. Wash., xxiii, April 19, 1910, 53, in text.

*Cypseloides niger niger* AMERICAN ORNITHOLOGISTS' UNION, Check-list, 1910, 200 (extralimital).

### NEPHÆCETES NIGER JAMAICENSIS (Ridgway).

#### JAMAICAN BLACK SWIFT.

Similar to *N. n. niger*, but much darker, the upper and under parts sooty black, more or less distinctly (but not conspicuously) paler or more grayish sooty on chin, throat, and chest.

<sup>a</sup> Five specimens, from Santo Domingo.

<sup>b</sup> Haiti: La Vega, Santo Domingo. Cuba; San Juan; San Cristóbal.



*Adult male*.—Length (skins), 142–166 (153); wing, 148–161 (154.5); tail, 58.5–69.5 (66); exposed culmen, 5.5–7 (6.5); tarsus, 12–13 (12.5); middle toe, 9–10 (9.5).<sup>a</sup>

*Adult female*.—Length (skins), 136–146 (140); wing, 149.5–150.5 (150); tail, 53–64.5 (58.5); exposed culmen, 5.5–6 (5.8); tarsus, 11.5–12 (11.8); middle toe, 9–9.5 (9.2).<sup>b</sup>

Island of Jamaica (Mayfield; St. Andrews; Passage Fort; Cinchona). Porto Rico? Dominica (Roseau)? Guadeloupe? St. Vincent? Martinique? British Guiana (Merumé Mountains)??

*Cypselus niger* (not *Hirundo nigra* Gmelin) GOSSE, Birds Jamaica, 1847, 63; Illustr. Birds Jam., 1849, pl. 10.—ALBRECHT, Journ. für Orn., 1862, 194 (Jamaica).—MARCH, Proc. Ac. Nat. Sci. Phila., 1863, 287 (Jamaica).

[*Cypselus*] *nigra* BONAPARTE, Consp. Av., i, 1850, 66, part.

*Nephæcetes niger* SCLATER, Cat. Am. Birds, 1862, 283, part (Jamaica).—BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 429, part (Jamaica).

*Nephocætes niger* GUNDLACH, Journ. für Orn., 1878, 159, 172 (Porto Rico).

[*Nephæcetes*] *niger* CORY, List Birds West Ind., 1885, 17, part (Jamaica).

[*Chætura*] *niger* GRAY, Hand-list, i, 1869, 68, no. 784.

*Cypseloides niger* SCLATER, Proc. Zool. Soc. Lond., 1865, 615, part (Jamaica; monogr.); Journ. für Orn., 1867, 138; Ibis, 1880, 74 (St. Vincent).—LAWRENCE, Proc. U. S. Nat. Mus., i, 1878, 459, 487 (Guadeloupe).—LISTER, Ibis, 1880, 41 (St. Vincent).—CORY, Auk, iii, 1886, 358, part (Jamaica; Porto Rico; Guadeloupe); viii, 1891, 48 (Guadeloupe); Birds West Ind.; 1889, 140, part (Jamaica; Porto Rico; Guadeloupe); Cat. West Ind. Birds, 1892, 105, part (Jamaica; Porto Rico; Guadeloupe; St. Vincent).—SCOTT, Auk, ix, 1892, 276 (Jamaica).—VERRILL (G. E.), Trans. Conn. Ac. Arts and Sci., viii, 1892, 330 (Dominica).—HARTERT, Cat. Birds Brit. Mus., xvi, 1892, 494, part (Guadeloupe; Martinique; St. Vincent; Merumé Mts., Brit. Guiana).—CLARK, Proc. Bost. Soc. N. H., xxxii, 1905, 272 (St. Vincent).—BOWDISH, Auk, xix, 1902, 366 (Porto Rico).

<sup>a</sup> Six specimens, from Jamaica.

<sup>b</sup> Three specimens, from Jamaica.

| Locality.                                                            | Wing. | Tail. | Ex-<br>posed<br>culmen. | Tarsus. | Middle<br>toe. |
|----------------------------------------------------------------------|-------|-------|-------------------------|---------|----------------|
| MALES.                                                               |       |       |                         |         |                |
| One adult male ( <i>N. n. niger</i> ?) from Cuba.....                | 151   | 63    | 6                       | 12      | 9              |
| One adult male ( <i>N. n. niger</i> !) from Santo Domingo.....       | 156   | 62    | 7                       | 12      | 8.5            |
| Six adult males ( <i>N. n. jamaicensis</i> ) from Jamaica.....       | 154.5 | 66    | 6.5                     | 12.5    | 9.5            |
| Four adult males ( <i>N. n. jamaicensis</i> ?) from Guadeloupe.....  | 150.7 | 65.9  | 6                       | 12.6    | 9.1            |
| One adult male ( <i>N. n. jamaicensis</i> ?) from Dominica.....      | 155.5 | 68    | 6                       | 13      | 9              |
| FEMALES.                                                             |       |       |                         |         |                |
| Five adult females ( <i>N. n. niger</i> ) from Santo Domingo.....    | 152.4 | 56.6  | 6.1                     | 12.6    | 9.1            |
| Three adult females ( <i>N. n. jamaicensis</i> ) from Jamaica.....   | 150   | 58.5  | 5.8                     | 11.8    | 9.2            |
| Two adult females ( <i>N. n. jamaicensis</i> ?) from Guadeloupe..... | 145.8 | 57.7  | 5.7                     | 12      | 8.5            |

Specimens from Dominica and Guadeloupe are not quite so dark as those from Jamaica, and may be different, but the series examined is much too small to settle the question. I have not seen specimens from Porto Rico, St. Vincent, Martinique, or British Guiana. Possibly the last are referable to the Costa Rican form.

[*Cypseloides niger* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 95 (Jamaica).—SHARPE, Hand-list, ii, 1900, 93, part.

[*Cypseloides niger* NEWTON, Handb. Jamaica, 1881, 108.

[*Cypseloides niger (typicus)* HARTERT, Das Tierreich, Podarg., Caprim., Macropt., 1897, 79, part.

[*Nephœcetes niger* var. *borealis*] a. *niger* COUES, Birds Northwest, 1874, 268, footnote, part (synonymy).

*Cypseloides niger jamaicensis* RIDGWAY, Proc. Biol. Soc. Wash., xxiii, Apr. 19, 1910, 53 (Mayfield, St. Andrews, Jamaica; coll. U. S. Nat. Mus.).

### NEPHŒCETES NIGER BOREALIS (Kennerly).

#### NORTHERN BLACK SWIFT.

Adult male probably similar to that of *N. n. niger* (from Cuba),<sup>a</sup> but larger; adult female similar to that of *N. n. jamaicensis*, but with feathers of abdomen and under tail-coverts much more distinctly tipped with white, these white tips often extending over whole of under parts posterior to chest.<sup>b</sup>

<sup>a</sup> I have not been able to examine an adult male of *N. n. niger* from the type locality (Santo Domingo).

<sup>b</sup> Supposed changes of plumage in this subspecies according to age are thus described by Mr. Frank M. Drew, in Bull. Nutt. Orn. Club, vii, 1882, 182, 183:

"An examination of ten birds of this species, taken at Howardsville, Colorado, in 1880 and 1881, leads me to believe that four years are necessary for them to acquire their complete plumage. A young male of the year, taken September 17, was marked as follows. General color dull black, every feather tipped with white, scarcely appreciable on upper back and throat, broader on upper tail coverts and rump. Crissum almost pure white. In birds of the second year the general plumage has a brownish cast; feathers of back tipped with brown, the head whitish, belly feathers yet broadly tipped with white. The third year the color is black, with a very faint edging of white on under tail coverts. In the fourth year pure black, forehead hoary, neck with a brownish wash. Feathers bordering the black loreal crescent whitish."

Mr. Drew is undoubtedly mistaken, however, in assuming that the sexes are alike in coloration, for all the sexed specimens examined by me, from whatever locality, show that all those with white-tipped feathers on posterior under parts are females and all those without these white-tipped feathers are males. This is true of all the subspecies, except that in the West Indian forms these white tips are much less distinct, sometimes nearly obsolete.

*Adult male*.—Length (skins), 139–168 (155); wing, 157.5–175 (165.8); tail, 53–66 (61); exposed culmen, 6–7.5 (6.8); tarsus, 12–13.5 (12.9); middle toe, 10–10.5 (10.2).<sup>a</sup>

*Adult female*.—Length (skins), 137–160 (147); wing, 156–164 (160); tail, 47–58.5 (52.5); exposed culmen, 6.5–7 (6.9); tarsus, 12–13 (12.5); middle toe, 9–10.5 (9.6).<sup>b</sup>

Western North America and southward to southern Mexico (to Guatemala?); north to British Columbia (Victoria; New Westminster; Ashcroft; Sumas; Kamloops; Vernon; Lake La Hache; Comox; Okanogan; Clinton; Caribou District; Chilliwack; Lula Island) and southern Alaska (Revillagigedo Island; Boca de Quadra), eastward to Colorado and New Mexico, southward to Lower California (San Quintín; San Carlos Landing; San Telmo; San Pedro Martir Mountains), and southern Mexico, in States of Vera Cruz (Orizaba; Jalapa; Jico), Tlaxcala (Laguna del Rosario), Mexico (Rio Seco near Córdoba), Puebla (San Miguel Molino), Durango (Huasamota), and Oaxaca (Guichicovi) and Territory of Tepic (Sierra Madre; Santa Teresa) to highlands of Guatemala (Raxché; Cobán; Dueñas; Atonenango) and Honduras.<sup>c</sup>

*Cypselus borealis* KENNERLY, Proc. Ac. Nat. Sci. Phila., ix, 1857, 202 (Simiahmoo Bay, Washington; coll. U. S. Nat. Mus.).

*Nephæcetes borealis* SCLATER, Proc. Zool. Soc. Lond., 1859, 236 (Vancouver Island).

*Cypseloides borealis* SCLATER, Proc. Zool. Soc. Lond., 1865, 615 (Puget Sound; monogr.); Journ. für Orn., 1867, 138.

[*Chætura*] *borealis* GRAY, Hand-list, i, 1869, 68, no. 785.

*Nephæcetes niger borealis* RIDGWAY, Bull. Essex Inst., vii, Jan., 1875, 17, 38 (Pyramid Lake Reservation, Nevada).—COUES, Check-list, 2d ed., 1882, no. 404.

[*Nephæcetes*] *niger borealis* COUES, Key N. Am. Birds, 2d ed., 1884, 457.

[*Nephæcetes*] *niger* var. *borealis* COUES, Key N. Am. Birds, 1872, 183.

| <sup>a</sup> Ten specimens.                                             |       | <sup>b</sup> Nine specimens. |                         |         |                |  |
|-------------------------------------------------------------------------|-------|------------------------------|-------------------------|---------|----------------|--|
| Locality.                                                               | Wing. | Tail.                        | Ex-<br>posed<br>culmen. | Tarsus. | Middle<br>toe. |  |
| MALES.                                                                  |       |                              |                         |         |                |  |
| Ten adult males from western United States and British Columbia.....    | 165.8 | 61                           | 6.8                     | 12.9    | 10.2           |  |
| Five adult males ( <i>N. n. costaricensis</i> ) from Costa Rica.....    | 159   | 58.6                         | 6.6                     | 12.4    | 9.5            |  |
| FEMALES.                                                                |       |                              |                         |         |                |  |
| Four adult females from western United States and British Columbia..... | 162   | 51.2                         | 6.8                     | 13      | 9.8            |  |
| Five adult females from Mexico.....                                     | 158.4 | 53.5                         | 7                       | 12.3    | 9.3            |  |
| Four adult females ( <i>N. n. costaricensis</i> ) from Costa Rica.....  | 157.1 | 51.9                         | 6                       | 12.3    | 9.5            |  |

<sup>c</sup> I have not seen specimens from Guatemala or Honduras, and therefore can not be sure that they are referable to this northern form.



*Nephocetes niger*, var. *borealis* COUES, Check-list, 1873, no. 270.—RIDGWAY, Bull. Essex Inst., vii, 1875, 17 (Pyramid Lake Reservation).

[*Nephocetes niger* var. *borealis*] b. *borealis* COUES, Birds Northwest, 1874, 269.

*Nephocetes niger*,  $\beta$ . *borealis* RIDGWAY, Orn. 40th Parallel, 1877, 565 (Pyramid Lake Reservation and near Fort Churchill, Nevada).

*Cypseloides niger borealis* RIDGWAY, Proc. U. S. Nat. Mus., iii, Aug. 24, 1880, 188; Nom. N. Am. Birds, 1881, no. 350.—DREW, Bull. Nutt. Orn. Club, vii, 1882, 182 (Howardsville, Colorado, up to 13,000 ft., breeding up to 11,000 ft.; measurements; descr. young; remarks on plumages, etc.); Auk, ii, 1885, 17 (vertical range in Colorado).—HENSHAW, Auk, iii, 1886, 78 (upper Pecos R., New Mexico, migrant).—GORMLEY, Auk, v, 1888, 424 (Seattle, Washington; descr. nest and eggs).—AMERICAN ORNITHOLOGISTS' UNION, Auk, xiv, 1897, 126; xvi, 1899, 111; Check-list, 3d ed., 1910, 200.—DAWSON, Auk, xiv, 1897, 175 (Okanogan Co., Washington).—COOKE, Bull. Col. Agr. Coll., no. 37, 1897, 86 (Colorado; breeds from 10,000–12,000 ft., and ranges much above 13,000 ft.); Auk, xxvi, 1909, 413 (Denver, Colorado, June).—GRINNELL (J.), Pub. 2, Pasadena Acad. Sci., 1898, 27 (Los Angeles Co., California, rare migrant), Pacific Coast Avifauna, no. 3, 1902, 40 (California range); Univ. Cal. Pub. Zool., v, 1908, 69 (San Bernardino Mts., s. California, July).—CHAPMAN, Bull. Am. Mus. N. H., x, 1898, 34 (Jalapa; Vera Cruz).—BAILEY (Florence M.), Handb. Birds W. U. S., 1902, 229.—VROOMAN, Auk, xviii, 1901, 394 (near Santa Cruz, California, breeding; descr. nest and eggs); Condor, vii, 1905, 176 (breeding on cliffs of seashore, near Santa Cruz, California; descr. nest and eggs).—RATHBUN, Auk, xix, 1902, 135 (Seattle, Washington, summer res.; habits).—BOWLES, Auk, xxiii, 1906, 144 (Tacoma, Washington).—KERNODE, Prov. Mus. Victoria, 1909, 51 (Victoria, Chilliwack, Okanogan, and Comox, Brit. Columbia).—SWARTH, Univ. Calif. Pub. Zool., vii, 1911, 71 (Revillagigedo I. and Boca de Quadra, s. Alaska; crit.; habits).

*Cypseloides niger borealis* HARTERT, Das Tierreich, Podarg., Caprim., Macropt., 1897, 79.

[*Cypseloides niger*.] Subsp.  $\alpha$ . *Cypseloides borealis* HARTERT, Cat. Birds Brit. Mus., xvi, 1892, 495 (Brit. Columbia; San Miguel Molino, Puebla; Sierra Madre, Tepic, etc.).

[*Cypseloides niger*]  $\alpha$ . *borealis* HARTERT, Cat. Birds Brit. Mus., xvi, 1892, p. xiv.

[*Cypseloides niger*] *borealis* SHARPE, Hand-list, ii, 1900, 93, part.

*Nephocaetes niger* (not *Hirundo nigra* Gmelin) BAIRD, Rep. Pacific R. R. Surv., ix, 1858, 142, part.—ELLIOT, Illustr. N. Am. Birds, i, 1869, pl. 20.

*Nephocetes niger* BAIRD, Rep. Pacific R. R. Surv., ix, 1858, pp. xxix, 922, part; Cat. N. Am. Birds, 1859, no. 108.

*Nephætes niger* SUMICHRAST, Mem. Bost. Soc. N. H., i, 1869, 562 (Vera Cruz, breeding).

*Nephacetes niger* COOPER, Orn. Calif., 1870, 349.—BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 429, part, pl. 45, fig. 4; iii, 1874, 521 (San Francisco, California).

*Cypseloides niger* AMERICAN ORNITHOLOGISTS' UNION, Check-list, 1886, no. 422.—BRYANT (W. E.), Proc. Calif. Ac. Sci., ser. 2, 1889, 288 (San Quintín and San Carlos Landing, Lower California; migrant).—FANNIN, Check-list Birds Brit. Col., 1891, 29 (Victoria, B. C.).—RHOADS, Proc. Ac. Nat. Sci. Phila., 1893, 43 (Lula Island, Clinton, Lake La Hache, Ashcroft, Kamloops, and Vernon, Brit. Columbia; habits).—FISHER (A. K.), North Am. Fauna, no. 7, 1893, 54 (Owens Lake, near Keeler, Independence, etc., s. e. California, May, June).—ANTHONY, Zoö, iv, 1893, 236 (San Telmo and San Pedro Martir Mts., Lower California); Auk, xii, 1895, 139 (San Fernando, Lower California, May).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1894,

379, part (Brit. Columbia; w. United States; Rio Seco, near Córdoba; Valley of Mexico; Puebla; Laguna del Rosário, Tlaxcala; Guichicovi, Oaxaca; Raxché, Cobán, Dueñas, Alotenango, etc., Guatemala?).—BROOKS, Auk, xx, 1903, 282 (Caribou distr., Brit. Columbia).—BENDIRE, Life Hist. N. Am. Birds, ii, 1895, 175.—DAWSON, Wilson Bull., no. 10, 1896, 4 (Okanogan Co., e. Washington; habits).

*C[ypseloides] niger* RIDGWAY, Man. N. Am. Birds, 1887, 302, part.

### NEPHÆCETES NIGER COSTARICENSIS (Ridgway).

#### COSTA RICAN BLACK SWIFT.

Similar to *N. n. borealis*, but decidedly darker, the adult female with feathers of abdomen and flanks more broadly tipped with white, and averaging slightly smaller; adult male similar to that of *N. n. jamaicensis*, but wing averaging longer and tail decidedly shorter, and general color of head and neck decidedly more grayish.

*Adult male*.—Length (skins), 135–152 (146); wing, 154–165.5 (159); tail, 57.5–63.5 (58.6); exposed culmen, 6.5–7 (6.6); tarsus, 12–13 (12.4); middle toe, 9–10 (9.5).<sup>a</sup>

*Adult female*.—Length (skins), 134–145 (139); wing, 152.5–162 (157.1); tail, 50.5–53.5 (51.9); exposed culmen, 6; tarsus, 12–12.5 (12.3); middle toe, 9.5.<sup>b</sup>

Highlands of Costa Rica (San José; San Pedro; Buenos Aires).

*Cypseloides niger* (not *Hirundo nigra* Gmelin) ZELEDÓN, Anal. Mus. Nac. Costa Rica, i, 1887, 120 (San José, Costa Rica).—CHERRIE, Auk, vii, 1890, 333 (San José); ix, 1892, 324 (San José).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1894, 379, part (Costa Rica).

*C[ypseloides] niger* RIDGWAY, Man. N. Am. Birds, 1887, 302, part (Costa Rica).

[*Cypseloides niger*] Subsp. *α. Cypseloides borealis* HARTERT, Cat. Birds Brit. Mus., xvi, 1892, 495, part.

[*Cypseloides*] *borealis* SHARPE, Hand-list, ii, 1900, 93, part (Costa Rica).

*Cypseloides niger borealis* CARRIKER, Ann. Carnegie Mus., vi, 1910, 509 (highlands of Costa Rica).

*Cypseloides niger costaricensis* RIDGWAY, Proc. Biol. Soc. Wash., xxiii, Apr. 19, 1910, 53 (San José, Costa Rica; coll. U. S. Nat. Mus.).

#### Genus CYPSELOIDES Streubel.

*Cypseloides* STREUBEL, Isis, 1848, 366. (Type, *Hemiprocne fumigata* Streubel.)

*Acoronis c* BERTONI, Aves Nuevas del Paraguay, 1901, 66. (Type, *A. niveifrons* Bertoni=*Cypselus senex* Temminck.)

Rather small Chæturine Swifts (wing about 119–123 mm.) resembling and closely related to *Nephæcetes* but differing in truncate or very slightly emarginate or double-rounded tail, with rigid shafts to rectrices.

Nostrils rather broadly oval, nearly parallel, for the greater part posterior to the latero-frontal antiæ; distance from tip of longest secondary to that of longest primary decidedly less than two-thirds the total length of wing; tenth (outermost) primary longest in *C. cherriei*, decidedly shorter than ninth in *C. brunneitorques* (in the

<sup>a</sup> Five specimens.

<sup>b</sup> Four specimens.

<sup>c</sup> *Αἴψα*, air; *ἔρως*, bird. (Bertoni.)

latter more acuminate terminally); tail about one-third as long as wing (in *C. brunneitorques*) to nearly two-fifths as long (in *C. cherriei*), slightly emarginate (*C. brunneitorques*) or truncate (*C. cherriei*), the rectrices with rigid and slightly extended (protruded) shafts; tarsus decidedly longer than middle toe with claw; outer toe very nearly if not quite as long as middle toe, the inner nearly as long in *C. brunneitorques*, decidedly shorter in *C. cherriei*; hallux (without claw) more than half as long as inner toe (without claw).

*Coloration*.—Plain dark sooty or blackish; one species with a white spot on each side of forehead (in both sexes?), two with a rufous collar in adult male.

*Nidification*.—Nest (of *C. brunneitorques*) composed of moss, shallow and compact, placed in dark culverts, near water (probably in rocky banks or cliffs also).<sup>a</sup>

*Range*.—Southern Mexico to Brazil and Peru. (Five species.)

#### KEY TO THE SPECIES OF CYPSELOIDES.

a. A rufous collar round neck.

b. Chin and throat rufous. (Guiana and Trinidad.)

*Cypseloides rutilus* (extralimital).<sup>b</sup>

bb. Chin and throat dark sooty. (Southern Mexico to Peru.)

c. Coloration darker (back, etc., sooty black, under parts deep sooty grayish brown). (Southeastern Mexico to Peru.)

*Cypseloides brunneitorques brunneitorques* (p. 712).

cc. Coloration paler (back, etc., sooty brown, under parts sooty grayish. (Western Mexico.).....*Cypseloides brunneitorques griseifrons* (p. 714).

aa. No rufous on neck.

b. No white on head.

c. Smaller (wing less than 150 mm.).

d. Smaller (wing less than 135 mm.).

*Cypseloides brunneitorques brunneitorques*, adult female (p. 712).

dd. Larger (wing more than 145 mm.). (Brazil, Peru, and Ecuador.)

*Cypseloides fumigatus* (extralimital).<sup>c</sup>

cc. Larger (wing 175 mm.). (Brazil.).....*Cypseloides senex* (extralimital).<sup>d</sup>

bb. A white spot on each side of forehead. (Costa Rica.)

*Cypseloides cherriei* (p. 714).

<sup>a</sup> Orton, Am. Nat., iv, 1871, 713.

<sup>b</sup> *Hirundo rutila* Vieillot, Nouv. Dict. d'Hist. Nat., xiv, 1817, 528.—*Chætura rutila* Scater, Proc. Zool. Soc. Lond., 1863, 100, part.—*Cypseloides rutilus* Hartert, Cat. Birds Brit. Mus., xvi, 1892, 493; Das Tierreich, Podarg., Caprim., Macropt., 1897, 79.—*Hirundo robini* Lesson, Traité d'Orn., 1830, 270.

<sup>c</sup> *Hemiprocne fumigata* Streubel, Isis, 1848, 366.—*Cypseloides fumigatus* Scater, Proc. Zool. Soc. Lond., 1865, 615; Hartert, Cat. Birds Brit. Mus., xvi, 1892, 496; Das Tierreich, Podarg., Caprim., Macropt., 1897, 80.—*Nephocates fumigatus* Pelzeln, Orn. Bras., i Abth., 1868, 16.—[*Chætura*] *fumigatus* Gray, Hand-list, i, 1869, 68.

<sup>d</sup> *Cypselus senex* Temminck, Pl. Col., 1826, 397.—*Acanthylis senex* Bonaparte, Consp. Av., i, 1849, 65.—*Cypseloides senex* Scater, Proc. Zool. Soc. Lond., 1865, 614; Hartert, Cat. Birds Brit. Mus., xvi, 1892, 496; Das Tierreich, Podarg., Caprim., Macropt., 1897, 80.—*Chætura senex* Pelzeln, Orn. Bras., i Abth., 1868, 16.—*Hemiprocne temminckii* seu *temminckiana* Streubel, Isis, 1848, 368.—*Chætura major* Bertoni, Revista de Agronomía, ii, 1900, 58.—*Ærornis niveifrons* Bertoni, Aves Nuevas del Paraguay, 1901, 66.



## CYPSELOIDES BRUNNEITORQUES BRUNNEITORQUES (Lafresnaye).

## CHESTNUT-COLLARED SWIFT.

*Adult male*.—Pileum sooty black, the feathers along each side, immediately above the lores, narrowly margined or edged with whitish; lores deep black posteriorly, more sooty anteriorly; chin, throat, and malar region dark sooty grayish brown; a broad collar round neck deep cinnamon-rufous or chestnut-rufous, sharply defined and clearer in color on hindneck, usually more or less broken on foreneck by dusky center to feathers; remainder of upper parts sooty black, of under parts deep sooty grayish brown; bill black; iris dark brown; feet grayish brown or dusky (in dried skins); length (skins), 112–131 (122); wing, 120–133 (126.7); tail, 40.5–51 (45.3); exposed culmen, 5.5–6.5 (5.8); tarsus, 11–13 (11.9); middle toe, 7–8.5 (8).<sup>a</sup>

*Adult female*.—Similar to the adult male but without the rufous collar,<sup>b</sup> which is entirely replaced by the general dark sooty color; length (skins), 103–127 (116); wing, 121–130 (125.1); tail, 40–48 (43.4); exposed culmen, 5.5–6.5 (5.9); tarsus, 11–12.5 (11.8); middle toe, 7.5–8.5 (7.8).<sup>c</sup>

*Young*.—Similar to the adult female but texture of the plumage different (softer) and general coloration somewhat paler, especially on under parts, where, at least on flanks, abdomen, and under tail-

<sup>a</sup> Seventeen specimens.

<sup>b</sup> Among the seventeen specimens examined whose sex was determined as female by their respective collectors are five which have the rufous collar, exactly as in adult males. Whether these indicate that the female eventually attains the coloration of the adult male, or that the sex was erroneously determined is a question; but I incline to the latter view.

<sup>c</sup> Twelve specimens.

| Locality.                                                      | Wing. | Tail. | Ex-<br>posed<br>culmen. | Tarsus. | Middle<br>toe. |
|----------------------------------------------------------------|-------|-------|-------------------------|---------|----------------|
| MALES.                                                         |       |       |                         |         |                |
| Ten adult males from Costa Rica.....                           | 127.7 | 45.2  | 5.7                     | 11.8    | 7.9            |
| Four adult males from Guatemala (1) and Chiapas (3).....       | 124.9 | 45    | 5.8                     | 12.1    | 8.1            |
| Three adult males from Vera Cruz.....                          | 126.7 | 45.3  | 5.8                     | 11.9    | 8              |
| One adult male ( <i>C. b. griseifrons</i> ) from Tepic.....    | 119   | 41    | 6.5                     | 12.5    | 8.5            |
| FEMALES.                                                       |       |       |                         |         |                |
| One adult female from Peru.....                                | 123   | 42    | 5.5                     | 11.5    | 8              |
| Nine adult females from Costa Rica.....                        | 125.3 | 43.3  | 6                       | 11.9    | 7.7            |
| One adult female from Chiapas.....                             | 126.5 | 46    | 5.5                     | 11.5    | 8              |
| One adult female from Oaxaca.....                              | 124   | 42    | 5.5                     | 12.5    | 8.5            |
| Two adult females ( <i>C. b. griseifrons</i> ) from Tepic..... | 122.2 | 41.2  | 6                       | 12.2    | 8.2            |

I am not able to discern any color differences between specimens from the different localities (except in case of those from Tepic).

coverts, the feathers have more or less distinctly paler terminal margins; young males (sometimes, at least) with feathers of neck tinged or narrowly tipped with rusty.

Southeastern Mexico, in States of Vera Cruz (Orizaba; Jico; Tuxpango), Puebla (San Miguél Molino), Mexico (near City of Mexico), Oaxaca (Mount Zempoáltepec) and Chiapas (Chicharras); highlands of Guatemala (Dueñas); highlands of Costa Rica (Volcán de Irazú; San Pedro; San José; El General; Pozo Real de Térraba) and southward through Panamá (Calovévora), Colombia (Retiro, Antioquía) and Ecuador (Quito Valley; Mapoto; Gualaquiza) to Peru (La Glória; La Mercéd; Santa Ana; Amable Maria; Idma).

*Chatura brunneitorques* LAFRESNAYE, Rev. Zool., 1844, 81 (Colombia; coll. Lafresnaye).—SALVIN and GODMAN, Ibis, 1882, 83 (Mexico; Guatemala; Panamá; Colombia; Ecuador; synonymy); Biol. Centr.-Am., Aves, ii, 1894, 378 (Tuxpango and Orizaba, Vera Cruz; San Miguél Molino, Puebla; near Dueñas, Guatemala; San José, Costa Rica; Chiriquí and Calovevora, Panamá; Colombia; Ecuador).—TACZANOWSKI and BERLEPSCH, Proc. Zool. Soc. Lond., 1885, 105 (Mapoto, Ecuador).—ZELEDÓN, Anal. Mus. Nac. Costa Rica, i, 1887, 120 (San José, Costa Rica).—RIDGWAY, Proc. U. S. Nat. Mus., xi, 1888, 542 (San José, Costa Rica; crit.).—SALVADORI and FESTA, Boll. Mus. Zool., etc., Torino, xv, 1900, 12 (Gualaquiza, e. Ecuador).—CHERRIE, Auk, ix, 1892, 324 (San José, Costa Rica).

*C[hatura brunneitorques]* RIDGWAY, Man. N. Am. Birds, 1887, 303.

*[Acanthylis] brunneitorques* BONAPARTE, Conspect. Av., i, 1850, 64.

*Cypseloides brunneitorques* HARTERT, Cat. Birds Brit. Mus., xvi, 1892, 493 (Retiro, Colombia; etc.).—BERLEPSCH and STOLZMANN, Proc. Zool. Soc. Lond., 1902, 29 (La Glória and La Mercéd, centr. Peru; crit.); Ornis, 1906, 96 (Santa Ana and Idma, Peru).

*C[ypseloides] brunneitorques* HARTERT, Das Tierreich, Podarg., Caprim., Macropt., 1897, 79.

*[Cypseloides] brunneitorques* SHARPE, Hand-list, ii, 1900, 93.

*Cypseloides brunneitorques brunneitorques* CARRIKER, Ann. Carnegie Mus., vi, 1910, 509 (Costa Rica).

*Acanthylis rutila* (not *Hirundo rutila* Vieillot) SCLATER, Proc. Zool. Soc. Lond., 1855, 135.

*Chatura rutila* SALVIN and SCLATER, Ibis, 1860, 37, pl. 3 (Dueñas, Guatemala; crit.).—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1869, 363 (near City of Mexico); 1879, 531 (Retiro, Antioquía, Colombia).—SCLATER, Cat. Am. Birds, 1862, 283 (Dueñas, Guatemala); Proc. Zool. Soc. Lond., 1863, 100, part (Dueñas; monogr.); 1865, 613 (Dueñas; monogr.); Journ. für Orn., 1867, 135, part.—SUMCHRAST, Mem. Bost. Soc. N. H., i, 1869, 562 (highlands of Vera Cruz); La Naturaleza, v, 1881, 250 (Tuxpango, near Orizaba, Vera Cruz).—ORTON, Am. Nat., iv, 1871, 713 (Quito Valley, Ecuador; descr. nest).—TACZANOWSKI, Proc. Zool. Soc. Lond., 1874, 545 (Amable Maria, centr. Peru).

*[Chatura] rutila* GRAY, Hand-list, i, 1869, 66, no. 764, part (Guatemala).—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 95, part (Mexico to Ecuador).

## CYPSELOIDES BRUNNEITORQUES GRISEIFRONS (Nelson).

## TEPÍC SWIFT.

Similar to *C. b. brunneitorques*, but coloration paler (the back, etc., deep sooty instead of nearly black, the under parts of body grayish sooty), and feathers of forehead (in both sexes) margined with pale grayish, these margins becoming broader and whitish on sides of forehead, along upper margin of loreal region.

*Adult male*.—Length (skin), 127.5; wing, 119 (primaries much worn at tip); tail, 41 (worn at tip); exposed culmen, 6.5; tarsus, 12.5; middle toe, 8.5.<sup>a</sup>

*Adult female*.—Length (skins), 125–127 (126); wing, 121.5–123 (122.2); tail, 40–42.5 (41.2); exposed culmen, 6; tarsus, 12–12.5 (12.2); middle toe, 8–8.5 (8.2).<sup>b</sup>

Western Mexico, in Territory of Tepíc (Santa Teresa); also (according to Nelson) Sierra Madre of Jalisco, western Zacatecas, and southern Durango.

*Cypselus brunneitorques griseifrons* NELSON, Auk, xvii, July, 1900, 262 (Santa Teresa, Tepíc, w. Mexico; coll. U. S. Nat. Mus.).

## CYPSELOIDES CHERRIEI Ridgway.

## CHERRIE'S SWIFT.

*Adult (male?)*.—Uniform deep, dark sooty, very slightly paler below (the chin sooty grayish), the remiges and rectrices very slightly darker (almost sooty black); lores sooty black; a conspicuous white spot on each side of forehead and a smaller postocular spot or streak of white; bill black; iris dark brown; legs and feet dusky (in dried skin); length (skin), 129.5; wing, 127; tail, 47; exposed culmen, 6; tarsus, 13; middle toe, 9.<sup>c</sup>

*Adult female?*—Similar to the adult male(?), as described above, but white spots on forehead slightly smaller, postocular white spot or streak wanting, and feathers of abdomen and flanks tipped, narrowly, with white; length (skin), 118; wing, 123; tail, 46.5; exposed culmen, 6; tarsus, 13; middle toe, 9.<sup>c</sup>

High mountains of Costa Rica (Volcán de Irazú).

*Cypseloides cherriei* RIDGWAY, Proc. U. S. Nat. Mus., xvi, no. 923, June 13, 1893, 44 (Volcan de Irazú, Costa Rica; coll. U. S. Nat. Mus.).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1892, 380.—CARRIKER, Ann. Carnegie Mus., vi, 1910, 510 (Costa Rica).

*C[ypseloides] cherriei* HARTERT, Das Tierreich, Podarg., Caprim., Macropt., 1897, 80. [*Cypseloides] cherriei* SHARPE, Hand-list, ii, 1900, 94.

## Genus CHÆTURA Stephens.

*Chætura* STEPHENS, Shaw's Gen. Zool., xiii, pt. ii, 1825, 76. (Type, *Hirundo pelagica* Linnæus.)

*Acanthylis* BOIE, Isis, 1826, 971. (Type, *Hirundo spinicauda* Temminck.)

*Acanthylis* (emendation) NEWTON (A. and E.), Handb. Jamaica, 1881, 108.—HARTERT, Cat. Birds Brit. Mus., xvi, 1892, 470, footnote.

<sup>a</sup> One specimen (the type).

<sup>b</sup> Two specimens.

<sup>c</sup> One specimen.



*Rhaphidura* OATES, Birds Burmah, ii, 1883, 6. (Type, *Acanthylis leucopygialis* Blyth.)

*Acanthura*<sup>a</sup> GUILDING, Zool. Journ., iii, 1827, 407. (Type, *Hirundo acuta* "Stephens" i. e. Gmelin.)

Small Chæturine Swifts (wing about 100–130 mm.) resembling *Cypseloides* but with the hallux relatively much smaller (less than half as long as inner toe) and with shafts of the rectrices more rigid, usually conspicuously extruded terminally.

Nostrils elliptical, nearly parallel, for the most part anterior to the latero-frontal antiæ; distance from tip of longest secondary to that of longest primary about two-thirds the total length of wing; tenth and ninth primaries longest, usually nearly or quite equal in length, but sometimes one or the other a little shorter, the tenth (outermost) more or less narrowed (sometimes subacuminate) terminally; tail (to base of spines) less than two-ninths to more than one-third as long as wing, truncate or slightly rounded, very firm, the shafts very rigid and, usually, conspicuously extruded terminally, forming spine-like tips; tarsus equal to or longer than middle toe with claw, entirely naked, nonscutellate; outer toe slightly shorter, the inner toe slightly to decidedly shorter, than middle toe; hallux very small and weak, less than half as long as inner toe.<sup>b</sup>

*Coloration*.—Plain sooty or blackish, sometimes with a gray or whitish rump-patch or band, one species with the rump, tail-coverts, and tail light gray in contrast with rest of plumage.

*Nidification*.—Nest in form of a half saucer or shallow cup, composed of dried twigs glued together by salivary excretion and attached by same substance to the inner wall of a hollow tree, chimney, or similar place.

#### KEY TO THE SPECIES AND SUBSPECIES OF CHÆTURA.

- a. Under parts of body and under tail-coverts gray or sooty, concolor with or paler than tail.
- b. Rump brownish gray or grayish brown, concolor with tail and not conspicuously lighter than back; tail relatively shorter (only two-sevenths as long as wing).
- c. Under parts and rump darker brownish gray or grayish brown.
- d. Larger (wing 122–133 mm.); pileum and back not blackish. (Eastern North America, south to eastern Mexico in winter.)

*Chætura pelagica* (p. 717).

<sup>a</sup> "Ἀκανθα, thorn, spine; οὐρά, tail. (Richmond.)

<sup>b</sup> According to Lucas (Auk, xiii, 1896, 82) *Chætura* (*C. pelagica* at least) is peculiar among the North American genera of Swifts in lacking the deltoid muscle. This muscle is present not only in other North American genera but also in *Tachornis*, *Streptoprocne*, *Collocalia*, and *Macropteryx* (double in the last, single in the rest). It is not known, however, whether it is present or absent in *Panyptila*, *Claudia*, *Micropus*, or *Cypseloides*, or other species of *Chætura* than *C. pelagica*. (See Auk, xvi, 1899, 77, as to deltoid muscle in *Streptoprocne*.)

- dd. Smaller (wing 105–116.5 mm.); pileum and back blackish.
- e. Darker; rectrices with conspicuous spiny tips; wing averaging 111.2, tail 36.2, in male, wing 111.8, tail 37.1, in female. (Eastern Mexico to Costa Rica.).....*Chætura richmondi* (p. 719).
- ee. Paler, especially under parts; rectrices without distinct (if any) spiny tips (except in very fresh plumage); wing averaging 105.5, tail 27.7, in male, wing 105.2, tail 30.1, in female. (Yucatan.)
- Chætura gaumeri* (p. 721).
- cc. Under parts and rump much paler brownish gray. (Western North America, south in winter to Guatemala.).....*Chætura vauxii* (p. 722).
- bb. Rump clearer gray, ash gray, or pale buffy gray, contrasting with the black or blackish tail as well as with black or dark sooty of back; tail relatively longer (one-third or more as long as tail).
- c. Pileum and back dark sooty.
- d. Rump deep brownish gray or sooty gray, shading gradually into the darker color of upper tail-coverts. (Dominica, Guadeloupe, and Santa Lucia, Lesser Antilles.).....*Chætura acuta* (p. 724).
- dd. Rump pale buffy gray, forming a broad and sharply defined band, abruptly contrasted with dark sooty or sooty blackish of back and upper tail-coverts. (Guianas and Trinidad to eastern Brazil.)
- Chætura spinicauda* (extralimital).<sup>a</sup>
- cc. Pileum and back glossy black. (*Chætura cinereiventris*.<sup>b</sup>)
- d. Upper tail-coverts black or blackish, in contrast with pale gray of rump.
- e. Under parts of body paler; slightly smaller (wing 110 mm.). (Eastern Brazil.).....*Chætura cinereiventris cinereiventris* (extralimital).<sup>c</sup>
- ee. Under parts of body darker; slightly larger (wing 111.1 mm.). (Pacific coast district from Costa Rica to northern Colombia.)
- Chætura cinereiventris fumosa* (p. 725).

<sup>a</sup> *Hirundo spinicauda* [Temminck?] Catal. Naamlyst Vog. Johan. Sonnenberg Galant, 1810, 13 (based on *l'Hirondelle acutipenne* Buffon, Hist. Nat. Ois., vi, 701; *Hirondelle à queue pointue de Cayenne* Daubenton, Pl. Enl., 726, fig. 1); Kuhl, Buff. et Daub. Fig. Av. Col. Nom. Syst., 1820, 13 (credits name to Temminck).—*Cypselus spinicaudus* Temminck, Tabl. Méth., 1839, 78.—*Acanthylis spinicauda* Boie, Isis, 1826, 971; 1844, 167.—*Chætura spinicauda* Sclater, Cat. Am. Birds, 1862, 283; Hartert, Cat. Birds Brit. Mus., xvi, 1892, 483; Das Tierreich, Podarg., Caprimulg., Macropt., 1897, 75.—*Chætura spinicauda spinicauda* Hellmayr, Verh. Orn. Gesellsch. Bayern, viii, 1908, 158 (range; synonymy; descr.).

<sup>b</sup> The following forms, referred to this species, as subspecies, by Hellmayr, I have not seen:

(1) [*Chætura cinereiventris*] Subsp. a. *Chætura guianensis* Hartert, Cat. Birds Brit. Mus., xvi, 1892, 486.—*Chætura cinereiventris guianensis* Hellmayr, Verh. Orn. Gesellsch. Bayern, viii, 1908, 155.

(2) *Chætura sclateri* Pelzeln, Orn. Bras., 1868, 15, 56.—*Chætura cinereiventris sclateri* Hellmayr, Verh. Orn. Gesellsch. Bayern, viii, 1908, 157.

(3) *Chætura sclateri occidentalis* Berlepsch and Taczanowski, Proc. Zool. Soc. Lond., 1883, 569.—*Chætura cinereiventris occidentalis* Hellmayr, Verh. Orn. Gesellsch. Bayern, viii, 1908, 158.

<sup>c</sup> *Chætura cinereiventris* Sclater, Cat. Am. Birds, 1862, 283; Hartert, Cat. Birds Brit. Mus., xvi, 1892, 485.—*Ch[ætura] cinereiventris (typica)* Hartert, Das Tierreich, Podarg., Caprim., Macropt., 1897, 76.—*Chaetura cinereiventris cinereiventris* Hellmayr, Verh. Orn. Gesellsch. Bayern, viii, 1908, 153 (e. Brazil; synonymy; descr.).—*Cypselus acutus* (not *Hirundo acuta* Vieillot) Maximilian, Beitr., iii, pt. i, 1830, 351 (Brazil; coll. Am. Mus. N. H.).

dd. Upper tail-coverts gray, or mostly so, like rump.

e. Upper tail-coverts partly blackish; under parts of body paler (as in *C. c. cinereiventris*). (Grenada, Tobago, Trinidad, and Margarita Island, Venezuela.).....*Chætura cinereiventris lawrencei* (p. 727).

ee. Upper tail-coverts entirely gray, like rump; under parts of body darker (as in *C. c. fumosa*). (Caribbean slope, Nicaragua and Costa Rica.)

*Chætura cinereiventris phæopygos* (p. 727).

aa. Under parts of body black, or sooty black, conspicuously darker than color of tail and tail-coverts. (St. Vincent and Grenada, Lesser Antilles; Tobago, and Trinidad to Venezuela, eastern Peru, and northern Brazil.)

*Chætura brachyura* (p. 728).

I am fully aware of the unsatisfactory character of the above "key" so far as it relates to the group containing *C. spinicauda* and *C. cinereiventris*. This results mainly from paucity of material, only two specimens of each of the forms designated and only three examples of *C. cinereiventris lawrencei* being available for comparison. Of *C. cinereiventris phæopygos* and what purports to be *C. fumosa* (from western Costa Rica) there are, however, extensive series; and in the case of the latter I am convinced that if the birds so identified really represent *C. fumosa* the latter is *not* a form of *C. spinicauda*, but, on the other hand, is very closely related to and almost certainly only subspecifically distinct from *C. cinereiventris*. Indeed I am able to separate it from *C. c. cinereiventris* (from Brazil) only by the much darker color of the under parts, which, however, are colored precisely as in *C. c. phæopygos*, the rump and upper tail-coverts being colored exactly as in *C. c. cinereiventris*, whereas *C. spinicauda* has a very definite pale buffy gray band across the rump (instead of a large area of purer or less yellowish gray), very abruptly defined against the black of upper tail-coverts, the color of the back and pileum being, moreover, sooty blackish instead of glossy bluish or greenish black.

#### CHÆTURA PELAGICA (Linnæus).

##### CHIMNEY SWIFT.

*Adults (sexes alike).*—Above plain dark sooty olive, passing into paler grayish brown (deep hair brown) on rump, upper tail-coverts, and tail, the plumage slightly glossy, the feathers of pileum darker centrally, producing an indistinctly squamate effect, those of the rump and the upper tail-coverts sometimes very narrowly and indistinctly tipped with paler; rigid shafts of rectrices black; wings slightly glossy sooty blackish, the inner webs of remiges passing into grayish brown toward edges; loreal region blackish, the feathers along projecting edges of forehead and crown (especially the superciliary portion) narrowly (sometimes very indistinctly or obsoletely) margined with whitish; sides of head otherwise, sides of neck, and under parts plain grayish brown (nearest dark hair brown, but more grayish), fading into a much paler tint (sometimes very pale dull gray or almost



grayish white on throat, chin, and malar region; bill black; iris brown; legs and feet brownish or dusky (more or less livid in life).

*Young*.—Not essentially if at all different in coloration from adults.

*Adult male*.—Length (skins), 116–132 (124); wing, 126–133 (129.2); tail, 39.5–44 (42.3); exposed culmen, 5–6 (5.7); tarsus, 11.5–12.5 (12); middle toe, 8–9 (8.3).<sup>a</sup>

*Adult female*.—Length (skins), 112–134 (117); wing, 122.5–133.5 (129.7); tail, 40–45.5 (42); exposed culmen, 5.5–6 (5.6); tarsus, 11–12.5 (11.7); middle toe, 8–8.5 (8.2).<sup>b</sup>

Eastern North America; north to New Brunswick (Fort Fairfield; Grand Falls), Nova Scotia (Cape Breton Island), Province of Quebec (Point de Monts), southern Labrador,<sup>c</sup> northern Ontario (Lake Muskoka), Manitoba (Winnipeg), and Alberta (Edmonton)—accidentally to southern Greenland (Sukkertoppen)—west to western border of Great Plains (Miles City, Montana, Black Hills, South Dakota) and (accidentally?) New Mexico (Rinconada, March 1); breeding southward to southern Florida (Tarpon Springs) and thence westward along Gulf coast to southeastern Texas; during migration southward to Vera Cruz (Jalapa) and Yucatan (Cozumél Island)—also to Guatemala?; <sup>d</sup> occasional straggler to the Bermudas.

[*Hirundo*] *pelagica* LINNÆUS, Syst. Nat., ed. 10, i, 1758, 192 (based on *Hirundo, cauda aculeata, americana* Catesby, Nat. Hist. Carolina, iii, 8, pl. 8).

*Chaetura pelagica* BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 432, pl. 45, fig. 7.—COUES, Birds Northwest, 1874, 267 (Bijou Hills, South Dakota); Bull. U. S. Geog. and Geol. Surv. Terr., iv, 1878, 614 (Pembina and Souris R., North Dakota).—REID, Bull. U. S. Nat. Mus., no. 25, 1884, 209 (Bermuda, straggler).—RIDGWAY, Proc. U. S. Nat. Mus., iii, 1880, 188; Orn. Illinois, i, 1889, 364.—HOFFMAN, Proc. Bost. Soc. N. H., 1882, 401 (Fort Berthold, North Dakota, breeding).—SETON, Auk, iii, 1886, 156 (w. Manitoba, summer res.).—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886, no. 423; 3d ed., 1910, 200.—SCOTT, Auk, vi, 1889, 252 (Tarpon Springs, Florida, breeding).—SALVIN, Ibis, 1889, 367 (Cozumél I., Yucatan; crit.).—THOMPSON, Proc. U. S. Nat. Mus., xiii, 1890, 556 (Winnipeg, etc., Manitoba).—HARTERT, Cat. Birds Brit. Mus., xvi, 1892, 480 (Jalapa, Vera Cruz; Cozumél I., etc.).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1894, 374 (Jalapa; Cozumél; Guatemala?).—BENDIRE, Life Hist. N. Am. Birds, ii, 1895, 177, pl. 1, fig. 25 (egg).—BEYER, Proc. Louisiana Soc. N. H. for 1897–99 (1900), 103 (Louisiana, breeding).—BAILEY (Florence M.), Handb. Birds W. U. S., 1902, 230.—WILLIAMS, Auk, xxi, 1904, 456 (Leon Co., Florida; summer res.).—TOWNSEND (C. W.), Auk, xxiii, 1906, 174 (Cape Breton I., Nova Scotia; descr. nest, etc.).—SWALES and TAVERNER, Wilson Bull., no. 55, 1906, 65 (Lake Muskoka, n. Ontario, common).—HUNT, Wilson Bull., no. 58, 1907, 18 (Lake Sebago, Maine).—PREBLE, North Am. Fauna, no. 27, 1908, 390 (Edmonton, Alberta, May 17).—VISHER, Auk, xxvi, 1909, 148 (Black Hills, w. South Dakota).

<sup>a</sup> Ten specimens.

<sup>b</sup> Eight specimens.

<sup>c</sup> Perhaps doubtful.

<sup>d</sup> See Salvin and Godman, Biol. Centr.-Am., Aves, ii, 1894, 375.

- [Chætura]* *pelagica* RIDGWAY, Man. N. Am. Birds, 1887, 303.
- Ch[ætura]* *pelagica* HARTERT, Das Tierreich, Podarg., Caprim., Macropt., 1897, 74.
- [Chætura]* *pelagica* SHARPE, Hand-list, ii, 1900, 92 ("Mexico to Costa Rica" in winter).
- [Chætura pelagica]* var. *pelagica* BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 431.
- [Hirundo]* *pelasgia* LINNÆUS, Syst. Nat., ed. 12, i, 1766, 345.—GMELIN, Syst. Nat., i, pt. ii, 1789, 1023.—LATHAM, Index Orn., ii, 1790, 581.
- Hirundo pelasgia* VIEILLOT, Ois. Am. Sept., i, 1807, 63, pl. 33; Nouv. Dict. d'Hist. Nat., xiv, 1817, 512.—TEMMINCK, Cat. Syst., 1807, 135.—WILSON, Am. Orn., v, 1812, 48, pl. 39, fig. 1.—STEPHENS, Shaw's Gen. Zool., x, 1817, 129.
- Cypselus pelasgius* BONAPARTE, Synop. Birds U. S., 1828, 63.—NUTTALL, Man. Orn. U. S. and Can., i, 1832, 609.—AUDUBON, Orn. Biog., ii, 1834, 329, pl. 158; v, 1839, 419.
- C[ypselus]* *pelasgius* MAXIMILIAN, Journ. für Orn., 1858, 99.
- Hemiprocne pelasgia* STREUBEL, Isis, 1848, 363.
- [Acanthylis]* *pelasgia* BONAPARTE, Consp. Av., i, 1850, 64.—WOODHOUSE, in Rep. Sitgreaves' Expl. Zuñi and Col. R., 1853, 63, part (Indian Territory; Texas).—CASSIN, Illustr. Birds Col., Tex., etc., 1855, 249.—BREWER, North Am. Oology, 1857, 108.
- Chætura pelasgia* STEPHENS, Shaw's Gen. Zool., xiii, pt. ii, 1825, 76.—BONAPARTE, Geog. and Comp. List, 1838, 8.—AUDUBON, Synopsis, 1839, 33; Birds Am., oct. ed., i, 1840, 164, pl. 44.—HURDIS, Jardine's Contr. Orn., 1850, 35 (Bermudas, straggler).—BAIRD, Rep. Pacific R. R. Surv., ix, 1858, 144; Cat. N. Am. Birds, 1859, no. 109.—MARTENS, Journ. für Orn., 1859, 216 (Bermudas).—WILLIS, An. Rep. Smithson. Inst., 1859, 287 (Bermudas).—SCLATER, Cat. Am. Birds, 1862, 282; Proc. Zool. Soc. Lond., 1863, 100 (monogr.); 1865, 610 (monogr.); Journ. für Orn., 1867, 132.—TRIPPE, Proc. Essex Inst., vi, 1871, 114 (Minnesota).—COUES, Check List, 1873, no. 271.—ALLEN, Proc. Bost. Soc. N. H., xvii, 1874, 62 (Fort Rice, Dakota; Yellowstone R. near mouth of Tongue R., Montana).—NEWTON, Man. N. H. Greenland, 1875, 97 (near Sukkertoppen, Greenland, 1 spec., 1863).
- [Chætura]* *pelasgia* GRAY, Hand-list, i, 1869, 66, no. 760.—COUES, Key N. Am. Birds, 1872, 183.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 95.
- Chætura pelasgia* RIDGWAY, Nom. N. Am. Birds, 1881, no. 351.—COUES, Check List, 2d ed., 1882, no. 405.—BATCHELDER, Bull. Nutt. Orn. Club, vii, 1882, 150 (Fort Fairfield and Grand Falls, New Brunswick, common).—NEHRING, Bull. Nutt. Orn. Club, vii, 1882, 169 (s. e. Texas, breeding).—MERRIAM, Bull. Nutt. Orn. Club, vii, 1882, 236 (Point de Monts, Quebec).—BICKNELL, Auk, ii, 1885, 257 (notes).—CANTWELL, Orn. and Ool., xv, 1890, 133 (Minnesota).
- C[hætura]* *pelasgia* COUES, Key N. Am. Birds, 2d ed., 1884, 457.
- (?) *Cypselus poliourus* TEMMINCK, Tabl. Méth., 1839, 78 (based on *Hirondelle à queue pointue, de la Louisiane* DAUBENTON, Pl. Enl., pl. 726, fig. 2; see Hellmayr, Novit. Zool., xiii, 1906, 37, in text).

### CHÆTURA RICHMONDI Ridgway.

#### RICHMOND'S SWIFT.

Similar to *C. gaumeri*, but larger and coloration darker (the pileum and back more nearly black), and rectrices with conspicuous spiny tips.

*Adults (sexes alike).*—Lores velvety black; pileum, hindneck, back, and scapulars uniform sooty black, faintly glossed with greenish;

rump and upper tail-coverts plain grayish brown (deep hair brown), the feathers (especially longer upper tail-coverts) sometimes narrowly and indistinctly margined at tip with paler; tail slightly darker grayish brown, the rigid shafts of rectrices black; wings black, slightly glossed with greenish blue; under parts plain grayish brown (like color of rump and upper tail-coverts), fading on throat and chin into much paler gray (sometimes almost grayish white), the feathers dusky grayish brown basally; bill black; iris brown; legs and feet grayish brown (more or less livid in life).

*Young*.—Not noticeably if at all different in coloration from adults.

*Adult male*.—Length (skins), 91–106 (99); wing, 104.5–116.5 (111.2); tail, 34–38 (36.2); culmen, 4.5–6 (5); tarsus, 10–11 (10.3); middle toe, 7–8 (7.5).<sup>a</sup>

*Adult female*.—Length (skins), 95–110 (104); wing, 107–115 (111.8); tail, 35.5–38.5 (37.1); culmen, 4.5–5.5 (4.9); tarsus, 10–11 (10.5); middle toe, 7–8 (7.6).<sup>b</sup>

Southeastern Mexico, in States of Tamaulipas (Carricitos; Guianes), Vera Cruz (Motzorongo; San Andres Tuxtla; Volcán de Tuxtla) and Oaxaca (Guichicovi; Santo Domingo) and southward through Guatemala (Gualán; Dueñas, Los Amates, Ysabál), Nicaragua (Rio Escondido) and Costa Rica (La Hondura; Volcán de Irazú; Carrillo; Cariblanco de Sarapiquí; El General; Coliblanco; Guayabo; Juan Viñas; Laguária, Copéy, Las Vueltas, and Santa Maria, Dota) to western Panamá (Chiriquí).

*Chætura gaumeri* (not of Lawrence) RIDGWAY, Proc. U. S. Nat. Mus., vi, 1883, 415 (Costa Rica).—SALVIN, Ibis, 1889, 367, part (Chiriquí, Panamá; crit.).—HARTERT, Cat. Birds Brit. Mus., xvi, 1892, 482, part (Costa Rica).—RICHMOND, Proc. U. S. Nat. Mus., xvi, 1893, 516 (Rio Escondido, Nicaragua).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1894, 376, part (Rio Escon-

<sup>a</sup> Fourteen specimens.

<sup>b</sup> Fifteen specimens.

| Locality.                                                                             | Wing. | Tail. | Ex-<br>posed<br>culmen. | Tarsus. | Middle<br>toe. |
|---------------------------------------------------------------------------------------|-------|-------|-------------------------|---------|----------------|
| MALES.                                                                                |       |       |                         |         |                |
| Two adult males ( <i>C. gaumeri</i> ) from Yucatan.....                               | 105.5 | 27.7  | 5                       | 11      | 7.5            |
| Two adult males ( <i>C. richmondi</i> ) from Vera Cruz.....                           | 115.2 | 36.2  | 5.2                     | 10.5    | 7.5            |
| Two adult males ( <i>C. richmondi</i> ) from Nicaragua.....                           | 110   | 35.2  | 5.7                     | 10.7    | 7.5            |
| Ten adult males ( <i>C. richmondi</i> ) from Costa Rica.....                          | 110.6 | 36.3  | 4.9                     | 10.2    | 7.6            |
| FEMALES.                                                                              |       |       |                         |         |                |
| Four adult females ( <i>C. gaumeri</i> ) from Yucatan.....                            | 105.2 | 30.1  | 4.6                     | 10.2    | 7.3            |
| Three adult females ( <i>C. richmondi</i> ) from Vera Cruz (1) and<br>Oaxaca (2)..... | 113.2 | 36.8  | 5.2                     | 10.5    | 7.5            |
| One adult female ( <i>C. richmondi</i> ) from Guatemala.....                          | 113.5 | 38.5  | .....                   | 10      | 7.5            |
| One adult female ( <i>C. richmondi</i> ) from Nicaragua.....                          | 110   | 36    | 5.5                     | 10.5    | 8              |
| Ten adult females ( <i>C. richmondi</i> ) from Costa Rica.....                        | 111.5 | 37.1  | 4.8                     | 10.6    | 7.5            |



dido; Costa Rica; Chiriquí).—DEARBORN, Pub. 125, Field Mus. N. H., 1907, 96 (Los Amates, e. Guatemala, Jan.).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 507 (Costa Rica).—FERRY, Pub. 146, Field Mus. N. H., orn. ser., i, no. 6, 1910, 264 (Guayabo, Costa Rica).

*C[hætura] gaumeri* RIDGWAY, Man. N. Am. Birds, 1887, 303, part (Costa Rica).

*Ch[ætura] gaumeri* HARTERT, Das Tierreich, Podarg., Caprim., Macropt., 1897, 75, part (Nicaragua; Costa Rica).

*[Chætura] gaumeri* SHARPE, Hand-list, ii, 1900, 92, part (Nicaragua; Costa Rica).

*Chætura vauzii* (not *Cypceus vauzii* Townsend) LAWRENCE, Bull. U. S. Nat. Mus., no. 4, 1876, 32 (Guichicovi, Oaxaca).

*Chætura vauzi* SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1894, 375, part (Guichicovi, Oaxaca; Rio Escondido, Nicaragua; Costa Rica; Honduras?).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 507 (Costa Rica).

*Chætura richmondi* RIDGWAY, Proc. Biol. Soc. Wash., xxiii, Apr. 19, 1910, 53 (Guayabo, e. Costa Rica; coll. U. S. Nat. Mus.).—PHILLIPS, Auk, xxviii, 1911, 77 (Carricitos and Guiaves, Tamaulipas).

### CHÆTURA GAUMERI Lawrence.

#### GAUMER'S SWIFT.

Similar to *C. richmondi*, but decidedly smaller (except bill and feet), paler, especially the rump, upper tail-coverts, and under parts, and rectrices without distinct (if any) projecting tip to shaft of rectrices (except, sometimes, in very fresh plumage).

*Adults (sexes alike).*—Lores velvety black; pileum, hindneck, back, and scapulars uniform very dark sooty brown or blackish brown, faintly glossed with greenish, the wings similar but more nearly black and with the gloss more bluish green; rump and upper tail-coverts grayish brown (hair brown, decidedly lighter than in *C. richmondi*), the feathers usually (?) narrowly and indistinctly tipped with paler; tail slightly darker grayish brown, the shafts of rectrices black; under parts grayish brown (hair brown), gradually becoming slightly paler on chest, where fading into much paler gray (sometimes almost grayish white) on chin and upper throat; bill black; iris brown; legs and feet dusky (more or less livid in life).

*Young.*—Not materially, if at all, different in coloration from adults.

*Adult male.*—Length (skins), 109; wing, 105–106 (105.5); tail, 26–29.5 (27.7); culmen, 5; tarsus, 11; middle toe, 7.5.<sup>a</sup>

*Adult female.*—Length (skins), 95.5–99.5 (97); wing, 99–111 (105.2); tail, 28–31.5 (30.1); culmen, 4.5–5 (4.6); tarsus, 10–10.5 (10.2); middle toe, 7–7.5 (7.3).<sup>b</sup>

Yucatan (Mérida; Chichen-Itza; Temax; La Vega; Silám; Tunkas; Ticúl; Cozumél Island).

<sup>a</sup> Two specimens.

<sup>b</sup> Four specimens.

Although the series examined of this form is a very large one, most of the specimens have not the sex determined.

- Chætura vauxii* (not *Cypcelus vauxii* Townsend) LAWRENCE, Ann. Lyc. N. Y., ix, 1869, 204 (Mérida, Yucatan).
- Chætura gaumeri* LAWRENCE, Ann. N. Y. Ac. Sci., ii, no. 8, March, 1882, 245 (Yucatan; coll. G. N. Lawrence); iii, 1883, 273; iv, 1884, 273 (crit.).—BOUCARD, Proc. Zool. Soc. Lond., 1883, 451 (Yucatan).—REICHENOW and SCHALOW, Journ. für Orn., 1884, 381 (reprint of orig. descr.).—SALVIN, Ibis, 1889, 367, part (Cozumél I., Yucatan; crit.).—HARTERT, Cat. Birds Brit. Mus., xvi, 1892, 482, part (Temax and Cozumél I., Yucatan).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1894, 376, part (Mérida, Silám, Temáx, Tunkas, Ticúl, and Cozumél I., Yucatan).—COLE, Bull. Mus. Comp. Zool., l, 1906, 127 (Chichen-Itza).
- Chætura gaumeri*? STONE, Proc. Ac. Nat. Sci. Phila., 1890, 206 (Tunkas and Ticúl, Yucatan).
- C[hætura] gaumeri* RIDGWAY, Man. N. Am. Birds, 1887, 303, part (Yucatan).
- Ch[ætura] gaumeri* HARTERT, Das Tierreich, Podarg., Caprim., Macropt., 1897, 75, part (Yucatan).
- [*Chætura*] *gaumeri* SHARPE, Hand-list, ii, 1900, 92, part (Yucatan).
- Chætura yucatanica* LAWRENCE, Ann. N. Y. Ac. Sci., iii, no. 5, Jan. 5, 1885, 156 (Silam, Yucatan; coll. G. N. Lawrence;=young).
- Chætura peregrinator* LAWRENCE, Ann. N. Y. Ac. Sci., iii, no. 9, Dec., 1885, 273 (Temáx, Yucatan; coll. G. N. Lawrence;=young full-grown).

#### CHÆTURA VAUXII (Townsend).

##### VAUX'S SWIFT.

Similar to *C. pelagica*, but decidedly smaller, and with color of rump, upper tail-coverts, and under parts (especially the latter) decidedly paler.

*Adults (sexes alike).*—Pileum, hindneck, back, and scapulars plain dark sooty olive, very faintly glossed with bronzy olive, the feathers of pileum (especially the forehead) with more or less distinct paler margins, producing a squamate effect; rump and upper tail-coverts rather light grayish brown (hair brown), the feathers sometimes narrowly margined terminally with paler: tail darker grayish brown, with rigid shafts of rectrices black; wings sooty blackish, becoming grayish brown on inner secondaries and toward edges of inner webs of primaries; loreal region black posteriorly, dark grayish brown anteriorly; feathers of projecting edge of forehead and crown (especially above black ante-orbital area) narrowly margined with whitish; auricular region, sides of neck, and under parts light grayish brown (pale hair brown), passing into grayish white on chest, throat, chin, and malar region and into deeper grayish brown (hair brown) on under tail-coverts; bill black; iris brown; feet brownish or dusky (more or less livid in life).

*Young.*—Not essentially if at all different from adults.

*Adult male.*—Length (skins), 101–117 (110); wing, 107–115 (112.8); tail, 34–37.5 (36.2); exposed culmen, 5–5.5 (5.3); tarsus, 10–11.5 (10.9); middle toe, 7–8 (7.6).<sup>a</sup>

<sup>a</sup> Ten specimens.

*Adult female*.—Length (skins), 105–119 (112); wing, 107–117 (111.9); tail, 36–39.5 (37.1); exposed culmen, 4.5–5.5 (5.1); tarsus, 10–11.5 (10.8); middle toe, 7–8 (7.5).<sup>a</sup>

Western United States, British Columbia (Nisqually; Goldstream; Lake La Hache; New Westminster; Vancouver Island; Sicamous) and southern Alaska (Revillagigedo Island; Boca de Quadra; Chickamin River; Broadfield Canal; Thomas Bay), east to Montana (Silver, Missoula County), western Nevada (Pyramid Lake Reservation), and New Mexico (?); south to Lower California (San José del Cabo; San Pedro Martir Mountains; between San Rafael and San Pedro Martir Mountains; Tia Juana; Salton River), and through Mexico, in States of Morelos (Cuernavaca), Jalisco (San Sebastián), Tlaxcala (Laguna del Rosario), Mexico (Valley of Mexico), Puebla, Vera Cruz (Rio Seco, near Córdoba; Motzorongo), and Oaxaca (Guichicovi) to highlands of Guatemala (Mazatenango; Alotenango; Cobán; Dueñas; Raxché) and Honduras.<sup>b</sup>

*Cypselus vauzii* TOWNSEND, Journ. Ac. Nat. Sci. Phila., viii, 1839, 148 (Ft. Vancouver, Columbia River).

*Cypselus vauzii* TOWNSEND, Narrative, 1839, 348.

*Chatura vauzii* DE KAY, Zool. N. Y., ii, 1844, 36.—BAIRD, Rep. Pacific R. R. Surv., ix, 1858, 145; ed. 1860 (Birds N. Am.), 145, pl. 18; Cat. N. Am. Birds, 1859, no. 110.—KENNERLY, Rep. Pacific R. R. Surv., x, pt. iv, 1859, pl. 18, fig. 2 (no text).—COOPER and SUCKLEY, Rep. Pacific R. R. Surv., xii, pt. ii, 1860, 165 (Straits of Fuca, Washington).—SCLATER, Cat. Am. Birds, 1862, 282; Proc. Zool. Soc. Lond., 1863, 100 (monogr.); 1865, 611 (monogr.; crit.); Journ. für Orn., 1867, 133.—COOPER, Orn. Calif., 1870, 351 (Coast Range, near Santa Clara, California); Auk, iv, 1887, 92 (Ventura Co., California).—HENSCHAW, Rep. Orn. Spec. Wheeler's Surv., 1876, 256 (Tejón Mts., California).—RIDGWAY, Proc. U. S. Nat. Mus., iii, 1880, 188; ix, 1886, 158 (Laguna del Rosario, Tlaxcala; crit.); Nom. N. Am. Birds, 1881, no. 352.—SUMICHRIST, La Naturaleza, v, 1881, 250 (Rio Seco, near Córdoba, Valley of Mexico).—FERRARI-PEREZ, Proc. U. S. Nat. Mus., ix, 1886, 158 (Laguna del Rosario, Tlaxcala).—SCOTT, Auk, iii, 1886, 429 (Santa Catalina Mts., 3,000–4,000 ft., Arizona, Oct.).—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886, no. 424.—BRYANT (W. E.), Proc. Calif. Ac. Sci., ser. 2, 1889, 288 (bet. San Rafael and San Pedro Martir, Lower California).—FANNIN, Check List Birds Brit. Col., 1891, 30 (e. and w. of Cascade Range on mainland).—RHOADS, Proc. Ac. Nat. Sci. Phila., 1893, 44 (Nisqually, Goldstream, and Lake La Hache, Brit. Columbia).—FISHER (A. K.), North Am. Fauna, no. 7, 1893, 55 (Olancho, Owens Lake, Yosemite Valley, Three Rivers, and Visalia, California).—ANTHONY, Zoë, iv, 1893, 236 (Tia Juana, etc., San Pedro Martir Mts., Lower California).—BENDIRE, Life Hist. N. Am. Birds, ii, 1895, 183, pl. 1, fig. 26 (egg).—DAWSON, Wilson Bull., no. 10, 1896, 4 (Lake Chelan, Okanogan Co., e. Washington, breeding); Auk, xiv, 1897, 175 (Okanogan Co.,

<sup>a</sup> Ten specimens.

<sup>b</sup> Salvin and Godman, Biol. Centr.-Am., Aves, ii, 1894, 376. Possibly the specimen from Honduras and some of those from Guatemala referred to *C. vauzii* by the authors of the "Biologia" are *C. richmondi*, as are most certainly those from Nicaragua and Costa Rica.



- Washington).—MERRILL (J. H.), Auk, xiv, 1897, 354 (Ft. Sherman, Idaho).—GRINNELL (J.), Pub. 2, Pasadena Ac. Sci., 1898, 27 (Los Angeles Co., California, migrant).—BREWSTER, Bull. Mus. Comp. Zool., xli, 1902, 111 (San José del Cabo, Lower California, Sept., Nov.).—RATHBUN, Auk, xix, 1902, 135 (Seattle, Washington, summer res.).—BAILEY (Florence M.), Handb. Birds W. U. S., 1902, 231.—BOWLES, Auk, xxiii, 1906, 144 (Puyallup Valley, Washington, breeding).—DEARBORN, Pub. 125, Field Mus. N. H., 1907, 96 (Mazatenango, Guatemala, March).—KERMODE, Prov. Mus. Victoria, 1909, 51 (Vancouver I., Sicamous, etc.).
- [*Chætura*] *vauxi* GRAY, Hand-list, i, 1869, 66, no. 761.—COUES, Key N. Am. Birds, 1872, 183.
- C[hætura]* *vauxi* RIDGWAY, Man. N. Am. Birds, 1887, 303.
- [*Chætura*] *vauxi* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 95.—SHARPE, Hand-list, ii, 1900, 92.
- Chætura vauxi* BROWN, Ibis, 1868, 421 (Vancouver I.).—BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, pl. 45, fig. 8; iii, 1874, 521 (near San Buenaventura and San Diego, California).—RIDGWAY, Bull. Essex Inst., vii, 1875, 15, 17 (Pyramid Lake Reservation, Nevada); Orn. 40th Parallel, 1877, 565 (Pyramid Lake Reservation).—ALLEN (C. A.), Bull. Nutt. Orn. Club, v, 1880, 55 (Nicasio, California; habits).—COUES, Check List, 2d ed., 1882, no. 406.—ANTHONY, Auk, iii, 1886, 165 (Washington Co., Oregon, summer res.).—MERRILL, Auk, v, 1888, 256 (Ft. Klamath, Oregon, summer res.; habits).—HARTERT, Cat. Birds Brit. Mus., xvi, 1892, 481.—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1894, 375 (Rio Seco, near Córdova, Vera Cruz; Valley of Mexico; Puebla; Laguna del Rosário, Tlaxcala; Raxché, Cobán, Dueñas, Alotenango, etc., Guatemala; "Honduras").—SWARTH, Pacific Coast Avifauna, no. 4, 1904, 16 (Huachuca Mts., Arizona, May); Univ. Calif. Pub. Zool., vii, 1911, 73 (Revillagigedo I., Boca de Quadra, Chickamin R., Broadfield Canal, and Thomas Bay, s. Alaska; crit.; habits).—TAYLOR, Condor, vii, 1905, 177 (Humboldt Co., California, breeding; descr. nest and eggs).—AMERICAN ORNITHOLOGISTS' UNION, Check List, 3d ed., 1910, 201.
- C[hætura]* *vauxi* COUES, Key N. Am. Birds, 2d ed., 1884, 458.
- Ch[ætura]* *vauxi* HARTERT, Das Tierreich, Podarg., Caprim., Macropt., 1897, 75.
- [*Acanthylis*] *vauxi* BONAPARTE, Consp. Av., i, 1850, 64.
- [*Chætura pelagica*] var. *vauxi* BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 431.
- Chætura (pelagica var?) vauxi* BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 435.
- Chætura* ———? SALVIN and SCLATER, Ibis, 1860, 37 (Cobán, Guatemala; Mexico; diagn.; crit.).
- Acanthylis pelagica* (not *Hirundo pelagica* Linnaeus) WOODHOUSE, Rep. Sitgreaves Expl. Zúñi and Col. R., 1853, 63, part (New Mexico?; California).

### CHÆTURA ACUTA (Gmelin).

#### MARTINIQUE SWIFT.

*Adults (sexes alike).*—Above, including tail, sooty black, faintly glossed with bluish green; rump brownish gray or grayish brown (grayer and rather lighter than hair brown), the upper tail-coverts much darker, the longer ones approaching sooty black; under parts deep sooty brown, darker on under tail-coverts, much paler on throat and chin, where feathers are dusky basally; bill black; iris brown; legs and feet grayish brown or dusky (in dried skins).

*Adult male*.—Length (skins), 105; wing, 106.5–111 (108.7); tail 37.5–39.5 (38.5); exposed culmen, 4; tarsus, 9; middle toe, 7.<sup>a</sup>

*Adult female*.—Length (skins), 107–111 (109); wing, 111–113 (112); tail, 37.5–39.5 (38.5); exposed culmen, 4.5; tarsus, 9.5; middle toe, 7.<sup>a</sup>

Islands of Guadeloupe, Dominica, Martinique,<sup>b</sup> St. Vincent, and Santa Lucia, Lesser Antilles.

[*Hirundo*] *acuta* GMELIN, Syst. Nat., i, pt. ii, 1789, 1023 (based on *Hirondelle acutipenne, de la Martinique* Buffon, Hist. Nat. Ois., vi, 702; *Hirondelle de la Martinique* Daubenton, Pl. Col., pl. 544, fig. 1).—LATHAM, Index Orn., ii, 1790, 581 (Martinique).

*Hirundo acuta* STEPHENS, Shaw's Gen. Zool., x, 1817, 131.

[*Chætura*] *acuta* GRAY, Hand-list, i, 1869, 66, no. 768.—SHARPE, Hand-list, ii, 1900, 92.

*Chætura acuta* HARTERT, Cat. Birds Brit. Mus., xvi, 1892, 486 (Dominica; Santa Lucia).—CORY, Cat. West Ind. Birds, 1892, 12, 106, 143 (Dominica; Guadeloupe; Santa Lucia; St. Vincent).—CLARK, Proc. Bost. Soc. N. H., xxxii, 1905, 273 (St. Vincent).

[*Chætura*] *acuta* HARTERT, Das Tierreich, Podarg., Caprim., Macropt., 1897, 76.

*Chætura poliura* (not *Cypselus poliorurus* Temminck) LAWRENCE, Proc. U. S. Nat. Mus., i, 1878, 62 (Dominica).

*Chætura dominicana* LAWRENCE, Ann. N. Y. Ac. Sci., i, no. 8, Dec., 1878, 255 (Dominica; coll. U. S. Nat. Mus.); Proc. U. S. Nat. Mus., i, 1878, 487 (Dominica).—LISTER, Ibis, 1880, 42 (St. Vincent).—SCLATER, Ibis, 1880, 75 (Santa Lucia; crit.).—CORY, Auk, iii, 1886, 346; viii, 1891, 48 (Guadeloupe); Birds West Ind., 1889, 141.—ALLEN, Bull. Nutt. Orn. Club, vi, 1881, 128 (Santa Lucia).—VERRILL (G. E.), Trans. Conn. Ac. Arts and Sci., viii, 1892, 330 (Dominica; habits; crit.).

[*Chætura*] *dominicana* CORY, List Birds West Ind., 1885, 17.

*Chætura dominica* SCLATER, Proc. Zool. Soc. Lond., 1889, 327 (Dominica).

*Chætura dominicana colardeawi* LAWRENCE, Auk, viii, Jan., 1891, 59 (Guadeloupe; coll. Am. Mus. N. H.).

### CHÆTURA CINEREIVENTRIS FUMOSA (Salvin.)

#### SMOKY SWIFT.

*Adults (sexes alike)*.—Pileum, hindneck, lores, back, scapulars, wings, and tail glossy bluish black (the remiges and rectrices with a very narrow terminal margin of whitish in fresh plumage); rump pale buffy gray, the feathers narrowly tipped with whitish; upper tail-coverts grayish black, the inner webs edged with light grayish; chin and upper throat very pale gray or grayish white (the feathers deep sooty gray basally) passing gradually into deep mouse gray on auricular region and chest, this deepening into blackish slate on under parts of body, the under tail-coverts slate-black; bill black;

<sup>a</sup> Two specimens, from Dominica.

An adult male from Guadeloupe (type of *C. dominica colardeawi* Lawrence) measures: Wing, 107; tail, 39. Eight adults of undetermined sex from Santa Lucia measure as follows: Wing, 103–108 (105.2); tail, 36–40.5 (38.4); exposed culmen, 4–4.5 (4.3); tarsus, 9; middle toe, 6.5–7 (6.9).

<sup>b</sup> Not recorded, however, from Martinique (the type locality) since Buffon.

iris dark brown; legs and feet brownish (in dried skins) the toes darker terminally.

*Adult male*.—Length (skins), 97–107 (102); wing, 108.5–116.5 (111.1); tail, 37–41.5 (39.2); exposed culmen, 4.5–6 (5.2); tarsus, 9.5–10.5 (10.1); middle toe, 7–7.5 (7.3).<sup>a</sup>

*Adult female*.—Length (skins), 97–106 (101); wing, 108.5–116 (110.9); tail, 39–42 (40.3); exposed culmen, 4.5–5.5 (4.9); tarsus, 10–10.5 (10.2); middle toe, 7–7.5 (7.4).<sup>b</sup>

Southwestern Costa Rica (Pozo Azul de Pirris; El General) and southward through Panamá (Bugaba, Chiriquí; Volcán de Chiriquí) to northern Colombia (Cacagualita, Santa Marta; Naranjo, west of Bucaramanga). (Also said to occur at Pará and Santarém on the lower Amazon;<sup>c</sup> but until the birds of this group can be carefully revised with the aid of ample material I have doubts as to the correct identification of specimens from the localities mentioned.)

*Chætura fumosa* SALVIN, Proc. Zool. Soc. Lond., Aug. 1, 1870, 204 (Bugaba, Chiriquí, Panamá; coll. Salvin and Godman).—WYATT, Ibis, 1871, 375 (Naranjo, 2,500 ft., Colombia).—HARTERT, Cat. Birds Brit. Mus., xvi, 1892, 483 (Bugaba, Panamá;? Santarém and Pará, lower Amazon).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1894, 377, part (Bugaba; Volcan de Chiriquí; Colombia;? Santarém;? Pará).

[*Chætura*] *fumosa* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 95.—SHARPE, Hand-list, ii, 1900, 92.

*Ch[ætura] fumosa* HARTERT, Das Tierreich, Podarg., Caprim., Macropt., 1897, 75.

*Chætura spinicauda fumosa* BANGS, Proc. New Engl. Zool. Club, iv, March 19, 1908, 25, 26 (Pozo Azul de Pirris, w. Costa Rica; crit.).—HELLMAYR, Verh. Orn. Gesellsch. Bayern, viii, 1908, 160 (synonymy; descr.).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 508 (Pacific lowlands of Costa Rica).

(?) *Chætura spinicauda* (not *Cypselus spinicaudus* Temminck) LAYARD, Ibis, 1873, 389 (Pará).

<sup>a</sup> Nine specimens, from Costa Rica.

<sup>b</sup> Ten specimens, from Costa Rica.

| Locality.                                                                          | Wing. | Tail. | Ex-<br>posed<br>culmen. | Tarsus. | Middle<br>toe. |
|------------------------------------------------------------------------------------|-------|-------|-------------------------|---------|----------------|
| MALES AND SEX UNDETERMINED.                                                        |       |       |                         |         |                |
| Nine adult males of <i>C. c. fumosa</i> from w. Costa Rica.....                    | 111.1 | 39.2  | 5.2                     | 10.1    | 7.3            |
| Six adult males of <i>C. c. phaeopygos</i> from e. Costa Rica.....                 | 107.1 | 39    | 5                       | 9.9     | 7.2            |
| One adult male of <i>C. c. lawrencei</i> from Margarita Is., Venezuela..           | 104   | 40    | 5                       | 11      | 7              |
| Two adults (sex not determined) of <i>C. c. cinereiventris</i> from<br>Brazil..... | 110   | 42    | 4.7                     | 11.5    | 7              |
| One adult (sex not determined) of <i>C. spinicauda</i> from Cayenne.               | 108.5 | 40.5  | 4                       | 10.5    | 6.5            |
| FEMALES.                                                                           |       |       |                         |         |                |
| Ten adult females of <i>C. c. fumosa</i> from w. Costa Rica.....                   | 110.9 | 40.3  | 4.9                     | 10.2    | 7.4            |
| Three adult females of <i>C. c. phaeopygos</i> from e. Costa Rica.....             | 105.7 | 38.8  | 4.8                     | 10.2    | 7.2            |
| One adult female of <i>C. c. lawrencei</i> from Grenada.....                       | 106.5 | 42.5  | 4                       | 10.5    | 6.5            |
| One adult female of <i>C. spinicauda</i> from British Guiana.....                  | 101   | 38.5  | .....                   | 10      | 7.5            |

<sup>c</sup> According to Hartert, Cat. Birds Brit. Mus., xvi, 1892, 483.



**CHÆTURA CINEREIVENTRIS LAWRENCEI** Ridgway.**LAWRENCE'S SWIFT.**

Similar to *C. c. phæopygos*, but upper tail-coverts darker (nearly black on outer webs) and color of under parts lighter (under parts of body slate color) with dusky bases to feathers of throat broader, more exposed.

*Adult male*.—Length (skin), 105.5; wing, 104; tail, 40; exposed culmen, 5; tarsus, 11; middle toe, 7.<sup>a</sup>

*Adult female*.—Length (skin), 108.5; wing, 106.5; tail, 42.5; exposed culmen, 4; tarsus, 10.5; middle toe, 6.5.<sup>b</sup>

Islands of Grenada, Tobago, and Trinidad; Margarita Island, Venezuela.

(?) *Acanthylis oxyura* (not *Hirundo oxyura* Vieillot) LÉOTAUD, Ois. Trinidad, 1866, 84.

*Chætura cinereiventris* (not of Sclater) WELLS, Proc. U. S. Nat. Mus., ix, 1886, 620 (Grenada, W. I.; habits).—CORY, Auk, v, 1888, 158 (Grenada); Birds West Ind., 1889, 294 (Grenada).

[*Chætura cinereiventris*.] Subsp. *α. Chætura guianensis* HARTERT, Cat. Birds Brit. Mus., xvi, 1892, 486, part (Grenada).

*Chætura cinereiventris guianensis* CORY, Cat. West Ind. Birds, 1892, 106 (Grenada).—CLARK, Proc. Bost. Soc. N. H., xxxii, 1905, 273 (Grenada).

*Ch[ætura] cinereiventris guianensis* HARTERT, Das Tierreich, Podarg., Caprim., Macropt., 1897, 76, part.

*Chætura lawrencei* RIDGWAY, Proc. U. S. Nat. Mus., xvi, no. 923, June 13, 1893, 43 (Grenada, Lesser Antilles; coll. U. S. Nat. Mus.).

*C[hætura] cinereiventris lawrencei* RIDGWAY, Proc. U. S. Nat. Mus., xvi, 1893, 44.

*Chætura cinereiventris lawrencei* RIDGWAY, Proc. U. S. Nat. Mus., xvi, June 13, 1893, 43 (Grenada; Tobago; Trinidad).—CHAPMAN, Bull. Am. Mus. N. H., vi, 1894, 58 (Trinidad).—ROBINSON, Proc. U. S. Nat. Mus., xviii, 1896, 668 (Margarita I., Venezuela).—HELLMAYR, Novit. Zool., xiii, 1906, 37 (Trinidad; crit.); Verh. Orn. Gesellsch. Bayern, viii, 1908, 154 (synonymy; descr.).

*Chætura guyanensis* (not *C. cinereiventris guianensis* Hartert) DALMAS, Bull. Soc. Zool. France, xiii, 1900, 143 (Tobago).

[*Chætura guianensis* SHARPE, Hand-list, ii, 1900, 92, part (Trinidad; "Lesser Antilles").

(?) *Chætura fumosa* (not of Salvin?) CHERRIE, Brookl. Inst. Arts and Sci., Science Bull., i, no. 8, 1906, 192 (Heights of Aripo, Trinidad).

**CHÆTURA CINEREIVENTRIS PHÆOPYGOS** Hellmayr.**GRAY-RUMPED CHIMNEY SWIFT.**

Similar to *C. c. lawrencei*, but upper tail-coverts clear ash gray, like rump, and under parts of body much darker, less strongly contrasting with blackish of under tail-coverts. Similar also to *C. c. fumosa*, but rump darker and less buffy gray, the upper tail-coverts concolor with the rump; wing averaging shorter.

*Adults (sexes alike)*.—Pileum, hindneck, lores, back, scapulars, wings, and tail deep, slightly glossy, bluish or greenish black; rump

<sup>a</sup> One specimen, from Margarita Island, Venezuela.

<sup>b</sup> One specimen (type of the subspecies) from Grenada.

and upper tail-coverts clear slate-gray, the feathers (except in worn plumage) narrowly tipped with whitish, the outer webs of tail-coverts rather darker gray; chin and upper throat pale gray (the feathers dusky or dark sooty basally), gradually passing into deep mouse gray on auricular region and chest, this passing, through dark slate or blackish slate on under parts of body, into slate-black on under tail-coverts; bill black; iris dark brown; legs and feet dusky.

*Adult male*.—Length (skins), 100–104 (102); wing, 104–110.5 (107.1); tail, 36–41 (39); exposed culmen, 4.5–5.5 (5); tarsus, 9.5–10.5 (9.9); middle toe, 7–7.5 (7.2).<sup>a</sup>

*Adult female*.—Length (skins), 100–102 (101); wing, 104.5–107.5 (105.7); tail, 37–41 (38.8); exposed culmen, 4.5–5 (4.8); tarsus, 9.5–10.5 (10.2); middle toe, 7–7.5 (7.2).<sup>b</sup>

Eastern Nicaragua (Rio Escondido) and Costa Rica (Rio Frio; Carrillo; Juan Viñas; Jiménez).

*Chætura cinereiventris guianensis* (not of Hartert) RIDGWAY, Proc. U. S. Nat. Mus., xvi, 1893, 43, part (Rio Escondido, Nicaragua).—RICHMOND, Proc. U. S. Nat. Mus., xvi, 1893, 516 (Rio Escondido; Rio Frio, Costa Rica).

*C[hætura] cinereiventris guianensis* RIDGWAY, Proc. U. S. Nat. Mus., xvi, 1893, 44, part (Rio Escondido, Nicaragua).

*Ch[ætura] cinereiventris guianensis* HARTERT, Das Tierreich, Podarg., Caprim., Macropt., 1897, 76. part.

[*Chætura*] *guianensis* SHARPE, Hand-list, ii, 1900, 92, part (Costa Rica; Nicaragua).

*Chætura fumosa* (not of Salvin) SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1894, 377, part (Rio Escondido; Rio Frio).

*Chætura cinereiventris phæopygos* HELLMAYR, Bull. Brit. Orn. Club, xvi, no. cxxiv, May 8, 1906, 83 (Carrillo, e. Costa Rica; coll. Tring Mus.); Verh. Orn. Gesellsch. Bayern, viii, 1908, 156 (synonymy; descr.).—BANGS, Proc. New Engl. Zool. Club, iv, 1908, 25, 26 (Carrillo and Juan Viñas, Costa Rica; crit.).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 508 (Caribbean lowlands of Costa Rica).

### CHÆTURA BRACHYURA (Jardine).

#### SHORT-TAILED SWIFT.

*Adults (sexes alike)*.—Head, neck, upper back, scapulars, wings, and under parts plain black, more or less distinctly glossed with bluish or greenish (especially on wings), the chest and throat more sooty, the chin still paler (sooty grayish); rump, tail-coverts (upper and lower), and tail light brownish gray or drab-gray (the tail-coverts narrowly tipped with whitish in fresh plumage), the gray darker on upper rump, where shading into grayish black or sooty on lower back; shafts of rectrices black; bill black; iris dark brown; legs and feet dusky.

*Adult male*.—Length (skins), 96–102 (99); wing, 120–122.5 (121); tail, 29.5–31 (30.3); exposed culmen, 4.5–5 (4.8); tarsus, 10.5–11 (10.7); middle toe, 7.5–8 (7.7).<sup>c</sup>

<sup>a</sup> Six specimens.

<sup>b</sup> Three specimens.

<sup>c</sup> Three specimens from St. Vincent.

*Adult female*.—Length (skins), 91–97 (95); wing, 117.5–125.5 (121.1); tail, 26–32 (29.4); exposed culmen, 4.5–5 (4.6); tarsus, 10–10.5 (10.2); middle toe, 7.5–8 (7.7).<sup>a</sup>

Islands of St. Vincent and Grenada, Lesser Antilles; also Tobago and Trinidad, and continental portion of South America, from British Guiana to eastern Ecuador and Peru and southern Brazil.

[*Acanthylis*] *poliourus* (not *Cypselus poliourus* Temminck) BONAPARTE, Consp. Av., i, 1850, 64.—LÉOTAUD, Ois. Trinidad, 1866, 86, part.

*Chætura polioura* CHAPMAN, Bull. Am. Mus. N. H., vi, 1894, 58 (Trinidad).

*Chætura poliura* SCLATER, Cat. Am. Birds, 1862, 283; Proc. Zool. Soc. Lond., 1863, 101 (monogr.); 1865, 611 (monogr.); 1870, 329 (diagn.); Journ. für Orn., 1867, 133.—PELZELN, Orn. Bras., i, Abth., 1868, 16.—FINSCH, Proc. Zool. Soc. Lond., 1870, 558 (Trinidad; crit.).—LAYARD, Ibis, 1873, 389 (Pará, lower Amazon; habits).—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1873, 289 (Xeberos and Chamicuros, e. Peru).—TACZANOWSKI, Orn. du Pérou, i, 1884, 229.—CORY, Ibis, 1886, 473 (St. Vincent, W. I.); Cat. West Ind. Birds, 1892, 106, 143 (St. Vincent; Grenada).—HARTERT, Cat. Birds Brit. Mus., xvi, 1892, 484 (St. Vincent; Tobago; Cayenne; Aunai, Brit. Guiana; Pará; Xeberos and Chamicuros, e. Peru; Ecuador).—KOENIGSWALD, Journ. für Orn., 1896, 372 (Sao Paulo, s. Brazil).—CLARK, Proc. Bost. Soc. N. H., xxxii, 1905, 273 (St. Vincent; Grenada).

[*Chætura*] *poliura* GRAY, Hand-list, i, 1869, 66, no. 762.—PELZELN, Orn. Bras., iv Abth., 1870, 401.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 95.—SHARPE, Hand-list, ii, 1900, 92 (n. Brazil; e. Peru; e. Ecuador; Guiana; Trinidad; "Lesser Antilles").

*Ch[ætura] poliura* HARTERT, Das Tierreich, Podarg., Caprim., Macropt., 1897, 76.

[*Chætura pelagica*] var. *poliura* BAIRD, BREWER, and RIDGWAY, Hist. N. Am. Birds, ii, 1874, 431.

*Acanthylis brachyura* JARDINE, Ann. and Mag. N. H., ser. 1, xviii, 1846, 120 (Tobago; coll. Sir W. Jardine).

*Chætura brachyura* CORY, Auk, v, 1888, 158 (St. Vincent); Birds West Ind., 1889, 294 (St. Vincent; Grenada).—HELLMAYR, Novit. Zool., xiii, 1906, 37 (Trinidad; crit. nomencl.); Verh. Orn. Gesellsch. Bayern, viii, 1908, 148 (range; synonymy; descr.).—BERLEPSCH, Novit. Zool., xv, 1908, 268 (Roche Maria, Cayenne).—LOWE, Ibis, 1909, 310 (St. Vincent; crit.).

*Chætura brachyercia* SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1867, 758, pl. 34 (Xeberos, e. Peru; coll. Sir W. Jardine<sup>b</sup>).—SCLATER, Proc. Zool. Soc. Lond., 1870, 329 (crit.).

[*Chætura*] *brachyercia* GRAY, Hand-list, i, 1869, 66, no. 765.

#### Suborder HETERODACTYLE.

#### HETERODACTYLE CORACIIFORMES.

=*Heterodactyles* BLAINVILLE, Bull. Soc. Philomat., 1816, 110.

=*Coccyges heterodactylæ* SCLATER and SALVIN, Nom. Av. Neotr., 1873, pp. vi, 103.—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1895, 480.

=*Heterodactyli* SEEBOHM, Ibis, Jan., 1890, 37.

<sup>a</sup> Four specimens from St. Vincent.

An adult of undetermined sex from Tobago measures as follows: Wing, 121.5; tail, 35.5; exposed culmen, 4.5; tarsus, 11.5; middle toe, 8.

<sup>b</sup> Now in coll. Brit. Mus.; see Sclater, Cat. Birds Brit. Mus., xvi, 1892, 485.



- =*Heterodactylæ* SCLATER, Ibis, Oct., 1880, 401, in text.—DUBOIS, Mém. Soc. Zool. France, 1891, 115.
- =*Trogoninæ* A. MILNE-EDWARDS, Ois. Foss., ii, 1867-1871.
- =*Trogonoidæ* STEJNEGER, Stand. Nat. Hist., iv, 1885, 433, in text.
- =*Trogonoidæ* COPE, Am. Nat., xxiii, Oct., 1889, 872, 873.
- =*Trogones* AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886, 208.—FUERBRINGER, Unters. Morph. Syst. Vög., 1888, 1567.—SEEBOHM, Classif. Birds, 1890, pp. vii, xi, 8.—SHARPE, Rev. Classif. Birds, 1891, 92; Hand-list, ii, 1900, 146.—GADOW, in Bronn's Thier-Reich., Vög., ii, 1893, 254, 301; Classif. Vertebr., 1898, pp. xv, 37.—BEDDARD, Struct. and Classif. Birds, 1898, 202.—KNOWLTON, Birds of the World, 1909, 50.

Zygodactylous but heterodactylous and heteropelmous coraciiform birds with myological formula AX and with the dorsal pteryla simple (not forked) between shoulders.

Palate schizognathous; nasals holorhinal; basipterygoid processes present; vomer present; metasternum 4-notched; spina interna absent, spina externa present (long and bifid); coracoids touching but not connected; hypotarsus complex; cervical vertebrae 15; complete ribs, 4-5 pairs; syrinx tracheo-bronchial; only the left carotid artery developed; cæca present (but short); intestinal convolutions of type VI; flexor tendons of type VIII; femoro-caudal and semitendinosus muscles present, the accessory femoro-caudal absent; pterylosis passerine, the spinal pteryla well defined from nape to oil-gland, not forked; wing-coverts coraciine (middle coverts absent); oil-gland nude; aftershaft of contour feathers very large; no adult downs; rectrices 12; tenth (outermost) primary very short; secondaries quincubital; young gymnopædic.

The *Heterodactylæ* are a strongly characterized group of Coraciiform birds which combine the cranial characters of the Caprimulgi, the myological formula of the Alcedinidæ (= *Anisodactylæ*, part), and an oscinine pterylosis with an entirely unique arrangement of the toes and the deep plantar tendons. Like the *Pici* and *Cuculiformes*, they have the toes in pairs (two in front and two behind), and are therefore to that extent zygodactylous; but they differ from these two groups and from all other birds in having the second digit (the inner front toe of anisodactyle birds) reversed, instead of the outer toe; in other words, the hallux is the *outer* of the two hind toes, whereas in all other zygodactyle birds it is the inner one. This unique arrangement of the toes is correlated with a unique arrangement of the deep plantar tendons, the front one of which (the flexor perforans) is split into two, leading, respectively, to the two front (third and fourth) toes, while the hinder one (the flexor hallucis) is also divided, the two branches leading, respectively, to the two posterior (first and second) toes—an arrangement in strong contrast with those of the other zygodactyle groups, in which the front plantar leads to the third digit only in the *Pici*, while the hind plantar leads to the first digit (hallux) only in the *Cuculiformes*.

## Family TROGONIDÆ.

## THE TROGONS.

- = *Trogonidæ* SWAINSON, Fauna Bor.-Am., ii, 1831, 326.—CABANIS, in Wiegmann's Archiv für Naturg., 1847, pt. i, 347.—BONAPARTE, Consp. Av., i, 1850, 148.—CABANIS and HEINE, Mus. Heine, iv, 1863, 154.—CARUS, Handb. Zool., i, 1868-75, 231.—STEJNEGER, Stand. Nat. Hist., iv, 1885, 433.—FUERBRINGER, Unters. Morph. Syst. Vög., 1888, 1331. (And of authors generally.)
- = *Trogoninæ* SUNDEVALL, Av. Disp. Tent., ii, 1873, 84 (and of Bonaparte, Cabanis, and Cabanis and Heine, as cited above).
- = *Trogonidæ* (emendation) OBERHOLSER, Outl. Classif. N. Am. Birds, Sept., 1905, 3.

The following characters are additional to those given under Suborder Heterodactylæ:

Bill short (much shorter than head), broad basally (triangular in vertical profile), the culmen strongly decurved and terminally more or less distinctly (but not conspicuously) uncinatè; maxillary tomium usually more or less serrate subterminally (smooth in one American genus, *Pharomachrus*, and in most of the Old World forms); base of bill concealed by well-developed, curved, antrorse latero-frontal, pre-malar, and mental bristle-tipped feathers; feet weak, the tarsus much shorter than longest anterior toe, chiefly (sometimes entirely) feathered; anterior toes united for about the basal half; wing short, rounded, very concave beneath; primaries more or less falcate or subfalcate terminally, the tenth (outermost) decidedly shortest; secondaries short; tail longer than wing, composed of twelve broad and nearly truncate rectrices; plumage dense and soft, easily detached; colors bright, brilliantly metallic (green, golden, coppery, blue, or violet above) in adult males, the under parts of body pure red, orange, or yellow; young usually spotted and without bright colors; nest in holes of trees, stumps, etc.; eggs plain white or pale bluish.

The Trogons are a well-marked group of Picarian birds, differing from all others in the conformation of the feet, the inner toe being reversed, or turned backward, instead of the outer, as is the case with all other birds which have the toes in pairs.

They are forest birds, and therefore arboreal, passing their entire life among the trees, where they nest in natural cavities or those abandoned by parrots or the larger woodpeckers. They feed chiefly on fruits and insects, both of which they take while flying. As a group the Trogons are celebrated for their beauty of plumage, some of the species being among the most beautiful of birds, the magnificent Quetzál (*Pharomachrus mocinno*), of Guatemala, excelling even the famed Birds of Paradise in the gorgeous beauty of its plumage and exquisite grace of form.

Like the Barbets, the Trogons are found in the Tropics of both hemispheres; but, unlike them, they are most numerous in America, where eight genera and about thirty-two species occur. Two peculiar genera, with a single species each, occur in Cuba and Haiti, respectively.

KEY TO THE GENERA OF TROGONIDÆ.

- a. Tomia without serrations (only the subterminal notch being present); nostril narrow, longitudinal, overhung by a broad operculum; adult males with upper tail-coverts distinctly outlined, the longest much more than half as long as tail (sometimes greatly exceeding the tail in length); middle wing-coverts very large, distinctly outlined, sometimes elongated.
- b. Culmen elevated basally, the depth of the bill at nostrils equal to or greater than its width at same point; loral feathers closely appressed, antrorse anteriorly; middle wing-coverts elongated, more or less pointed; adult males with longer upper tail-coverts reaching to or beyond tip of tail, distinctly narrowed terminally ..... *Pharomachrus* (p. 733).
- bb. Culmen depressed basally, the depth of bill at nostrils less than its width at same point; loral feathers retrorse, not closely appressed; feathers on sides of occiput elongated, very slender, forming a filamentous tuft; middle wing-coverts broadly rounded, not elongated; adult male with longer upper tail-coverts falling far short of tip of tail, more broadly rounded terminally.  
*Leptuas* (p. 740).
- aa. Tomia distinctly serrated, especially on mandible; nostril roundish, nonoperculate; adult males with upper tail-coverts blended, the longest less than half as long as tail; wing-coverts small, or at least not elongated nor conspicuously large.
- b. Auricular feathers normal; eyelids naked, forming a conspicuous orbital ring (brightly colored in life); sexes very different in color, the adult females without metallic hues; anterior toes united for more than basal phalanx.
- c. Larger and more stoutly built, with larger and heavier bill; tarsus decidedly shorter than longest anterior toe, the feet much stronger.
- d. Anterior toes united for first and second phalanges; tail less strongly graduated, the rectrices more rounded at tip, the lateral rectrices without white, or else with only narrow bars of that color, never tipped with white; abdomen and under tail-coverts red; adult males with chest and upper parts metallic bronze-green to bluish green, the wing-coverts and secondaries vermiculated; adult females with chest and upper parts slate color; young conspicuously spotted, very different from adults.  
*Curucujus* (p. 742).
- dd. Anterior toes united for first phalanx and only part of second phalanx; tail more strongly graduated, the rectrices broader and more truncated at tip, the lateral rectrices with much white (outermost ones sometimes wholly white); abdomen and under tail-coverts yellow or reddish orange; adult males with head black or slate color (the pileum sometimes metallic violet-blue), back, etc., metallic green, blue, or violet-blue, wing-coverts and secondaries uniform black or slate color; adult females with head, neck, chest, and upper parts slate color; young essentially like adult female in coloration ..... *Trogon* (p. 750).
- cc. Smaller and more slightly built, with relatively smaller and weaker bill; tarsus as long as longest anterior toe, the feet much weaker. (Tail always with more or less white, the lateral rectrices broadly tipped and usually barred with that color; abdomen and under tail-coverts red, orange, or yellow;



adult males with chest and upper parts metallic bronze, green, or blue, the wing-coverts and secondaries always vermiculated; adult females with chest and upper parts brown or slate color.)

- d. Tarsus feathered for not more than upper-half; tail decidedly longer than wing; plumage of young conspicuously spotted, very different from that of adults ..... *Trogonurus* (p. 761).
- dd. Tarsus feathered for at least greater part; tail little if any longer than wing; plumage of young similar to that of adults ..... *Chrysotrogon* (p. 784).
- bb. Auricular feathers slender, filamentous, curving outward terminally; eyelids feathered; sexes alike (or nearly so) in color, the adult females with back, etc., metallic green; anterior toes united for basal phalanx only.
- c. Rectrices normal in shape; sexes slightly different in coloration, the wing-coverts plain bronzy blackish in male, barred with white in female. *Temnotrogon* (p. 790).
- cc. Rectrices unique in shape, the longer ones deeply concavely incised at tip, where the lateral portions are prolonged into falcate points; sexes exactly alike in color ..... *Priotelus* (p. 793).

### Genus PHAROMACHRUS De la Llave.

*Pharomachrus* DE LA LLAVE, Registro Trimestre, i, num. 1, Jan., 1832, 48. (Type, *P. mocinno* De la Llave.)

*Pharomachus* (emendation) SCLATER, Proc. Zool. Soc. Lond., 1858, 60.

*Calurus* SWAINSON, Classif. Birds, ii, 1837, 337. (Type, *Trogon resplendens* Gould = *Pharomachrus mocinno* De la Llave.)

*Antisianus* FITZINGER, Sitz. k. Akad. Wiss. (Math.-Nat. Classe) [Wien], xxi, Heft. 2, July, 1856, 294. (Type, *Trogon antisianus* D'Orbigny, 1837 = *T. antisianus* D'Orbigny, 1835.)

*Cosmurus* REICHENBACH, Av. Syst. Nat., Aug. 1, 1850, pl. 88. (Type, *Trogon antisianus* D'Orbigny.)

*Tanypeplus* a CABANIS and HEINE, Mus. Hein., iv, March, 1863, 205. (Type, *Trogon pavoninus* Spix.)

Large Trogons with smooth (nonserrate) tomia, pileum more or less crested, middle wing-coverts elongated and decumbent, and upper tail-coverts much developed.

Bill moderate in size (distance from tip to nostril considerably less than from latter to anterior angle of eye), the culmen rather strongly arched, not depressed basally, rounded (not ridged), the tomia smooth (unserrated) but with a distinct subterminal notch on both maxilla and mandible, the tip of the latter forming a distinct ascending point; gonys about half as long as mandibular rami, the latter widely divergent, the distance across basal portion of interramal space about equal to length of rami; nostril narrow, longitudinal, overhung by a broad operculum; rictal bristles minute or obsolete, but chin with conspicuous antrorse, recurved bristles, the post-nasal feathers also with antrorse bristles; feathers of lores appressed, vertical, antrorse anteriorly, sometimes so much developed as to cover nostrils and forming a conspicuous, compressed, frontal duplex crest, which in

a "Von τανός (lang, gestreckt) und πέπλος (Oberkleid)." (Cabanis and Heine.)

adult males of some species extends backward to or beyond middle of crown, the feathers of the latter, together with those of the occiput, in one species (*P. mocinno*) much elongated, semidecomposed, forming a bushy crest; middle wing-coverts enlarged, more or less narrowed terminally, in the males of some species much elongated, decurved, and subacuminate; sixth primary longest, the seventh a little shorter, the tenth less than half to slightly more than half as long as sixth; tail slightly shorter to slightly longer than wing, strongly graduated (sometimes for more than one-third its length), the rectrices firm, tapering terminally, the tip not truncated; upper tail-coverts enlarged and elongated, the longer ones reaching to much beyond middle of tail, in adult males of one species (*P. mocinno*) several times as long as tail, forming streamer-like, pendant plumes; tarsus decidedly shorter than longest toe (without claw), the upper portion feathered.

*Coloration*.—Upper parts (including wing-coverts), throat, and chest, brilliant metallic green (the head sometimes golden or bronzy); remiges and at least four middle rectrices black, the three outer pairs of the latter usually mostly white; under parts posterior to chest rich bright red <sup>a</sup> (sometimes darker next to green of chest); adult females duller in color, with red of under parts more restricted anteriorly, the lower chest, at least, sometimes breast, sides, and abdomen, brownish or grayish.

*Range*.—Highlands of Chiapas to mountains of Peru, Bolivia, and Venezuela. (Five or six species.)

#### KEY TO THE SPECIES AND SUBSPECIES OF PHAROMACHRUS.

- a. Under parts metallic green anteriorly, red posteriorly (no brown or gray). (*Adult males*.)
- b. Loral and latero-frontal plumes greatly developed, antrorse and erect, forming a closely appressed bilateral crest, which anteriorly covers basal half or more of maxilla; lateral rectrices white.
- c. Crest greatly developed, involving whole of pileum; distal upper tail-coverts greatly elongated, several times longer than tail. (*Pharomachrus mocinno*.)
- d. Larger (wing averaging 206.6, tail 206.3) with supracaudal plumes much broader, averaging much longer (822.1 mm., sometimes more than 950 mm.), and more golden in color. (Southern Mexico to Honduras.)
- Pharomachrus mocinno mocinno*, adult male (p. 736).
- dd. Smaller (wing averaging 199, tail 187.4), with supracaudal plumes much narrower, averaging much shorter (660.5 mm., never more than 825 mm.), less golden in color. (Costa Rica and western Panamá; Nicaragua?)

*Pharomachrus mocinno costaricensis*, adult male (p. 739).

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<sup>a</sup> In one supposed species (possibly a color-variety of *P. auriceps*) the abdomen, etc., are orange-yellow. This is *Pharomachus xanthogaster* Turati and Salvadori, Proc. Zool. Soc. Lond., 1874, 652 (Bogotá, Colombia; coll. Count Turati); Oustalet, Nouv. Archiv. Mus. Paris, (3), vii, 1895, 229, pl. 8.

cc. Crest moderately developed, involving only forehead and lores; distal upper tail-coverts but little, if any, longer than tail. (Colombia to Ecuador, Bolivia, and Venezuela.)

**Pharomachrus antisimensis**, adult male (extralimital).<sup>a</sup>

bb. Loral and latero-frontal feathers much less developed, not forming a crest, and covering much less than basal half of maxilla; lateral rectrices wholly black or else only partly white for distal portion.

c. Lateral rectrices partly white distally; latero-frontal plumes more developed. (Sierra Nevada de Santa Marta, Colombia.)

**Pharomachrus festatus**, adult male (extralimital).<sup>b</sup>

cc. Lateral rectrices entirely black; latero-frontal plumes less developed.

d. Bill yellow. (Colombia to Venezuela and Peru.)

**Pharomachrus auriceps**, adult male (extralimital).<sup>c</sup>

dd. Bill red. (Basins of Upper Amazona and Rio Negro.)

**Pharomachrus pavoninus**, adult male (extralimital).<sup>d</sup>

aa. Under parts with brown or gray separating the green or bronze of chest from red of under tail-coverts, etc. (*Adult females*.)

<sup>a</sup> *Trogon antisimensis* D'Orbigny, Voy. Amér. Mérid., Ois., 1835-1844, 381, pl. 66, fig. 1 (Yungas, Bolivia).—*Pharomachrus antisimensis* Sclater, Proc. Zool. Soc. Lond., 1858, 60; Grant, Cat. Birds Brit. Mus., xvii, 1892, 433.—[*Trogon*] *antisimensis* D'Orbigny, Mag. de Zool., an 7, 1837, cl. ii, pl. 85.—*Calurus* *antisimensis* Gray, Gen. Birds, i, 1845, 71.—*Pharomachrus antisimensis* Gould, Mon. Trog., ed. 2, 1858, pl. 2 and text.—*Trogon pulchellus* Gould, Mon. Trog., ed. 1, 1838, pl. 22 and text.—*Trogon* (*Calurus*) *pulchellus* Gould, Mon. Trog., ed. 1, List of Plates, sp. 22.—*Calurus pulchellus* Gould, Mon. Trog., ed. 1, 1838, Synop. Sp. Calurus, sp. 9.—[*Pharomachrus*] *pulchellus* Bonaparte, Consp. Voluc. Zygod., 1854, 14.—*Trogon peruvianus* Gould, Mon. Trog., ed. 2, 1858, in text to pl. 2.—*Trogon fulgidus* Gould, Mon. Trog., ed. 1, 1838, pl. 24 and text (=immature male).—*Trogon* (*Calurus*) *fulgidus* Gould, Mon. Trog., ed. 1, 1838, List of Plates, sp. 24.—*Calurus* *fulgidus* Gray, Gen. Birds, i, 1845, 71.—[*Cosmurus*] *fulgidus* Bonaparte, Consp. Voluc. Zygod., 1854, 14.—*Pharomachrus fulgidus* Gould, Mon. Trog., ed. 2, 1858, pl. 3, and text.—*T[anypeplus]* *fulgidus* Cabanis and Heine, Mus. Hein., iv, 1863, 208.

<sup>b</sup> *Pharomachrus festatus* Bangs, Proc. Biol. Soc. Wash., xiii, Nov. 11, 1899, 92 (Chirua, Santa Marta, Colombia, 7,000 ft.; coll. E. A. and O. Bangs).

<sup>c</sup> *Trogon* (*Calurus*) *auriceps* Gould, Ann. and Mag. N. H., ix, 1842, 238 (Quito, Ecuador; coll. J. Gould).—*Calurus auriceps* Hartlaub, Verz. Mus. Bremen, 1844, 12.—[*Cosmurus*] *auriceps* Bonaparte, Consp. Voluc. Zygod., 1854, 14.—*Pharomachrus auriceps* Gould, Mon. Trog., ed. 2, 1858, pl. 4 and text; Grant, Cat. Birds Brit. Mus., xvii, 1892, 434 (erroneous descr. of adult male!).—*T[anypeplus]* *auriceps* Cabanis and Heine, Mus. Hein., iv, 1863, 207.—*T[anypeplus]* *heliactin* Cabanis and Heine, Mus. Hein., iv, Feb., 1863, 207 (Nanegál and Pallatanga, é. Ecuador; coll. Heine Mus.).—*Pharomachrus auriceps heliactin* Berlepsch and Taczanowski, Proc. Zool. Soc. Lond., 1884, 308 (Cayandeléd, w. Ecuador; crit.).—(?) *Pharomachrus xanthogaster* Turati and Salvadori, Proc. Zool. Soc. Lond., 1874 (pub. April. 1875), 652 (Colombia; coll. Count Turati).—*Trogon* (*Calurus*) *hargitti* Oustalet, Le Nat., ann. 13, sér. 2, v, no. 112, Nov. 1, 1891, 261 (int. Venezuela; coll. Paris Mus.).

<sup>d</sup> *Trogon pavoninus* Spix, Av. Bras., i, 1825-1826, 47, pl. 35 (Tabatinga and Mari-batanas, Brazil; coll. Munich Mus.); Gould, Mon. Trog., ed. 1, 1838, pl. 23 and text.—*Calurus pavoninus* Swainson, Classif. Birds, ii, 1837, 338.—*T[anypeplus]* *pavoninus* Cabanis and Heine, Mus. Hein., iv, 1863, 205.—*Pharomachrus pavoninus* Sclater and Salvin, Proc. Zool. Soc. Lond., 1867, 583; Gould, Mon. Trog., ed. 2, 1869, pl. 5 and text; Grant, Cat. Birds Brit. Mus., xvii, 1892, 436.



b. Feathers of crown and occiput elongated.

*Pharomachrus mocinno costaricensis*, adult female (p. 739.)<sup>a</sup>

bb. Feathers of crown and occiput not elongated.

c. Head brown.....*Pharomachrus antisimensis*, adult female (extralimital.)

cc. Head metallic green or bronze (at least on pileum).

d. Abdomen red, like under tail-coverts, etc.

e. Lateral rectrices extensively white terminally.

*Pharomachrus festatus*, adult female (extralimital.)

ee. Lateral rectrices wholly black or else with only a small terminal area of white.....*Pharomachrus auriceps*, adult female (extralimital.)

dd. Abdomen (except extreme lower portion) brown, like breast.

*Pharomachrus pavoninus*, adult female (extralimital.)

### PHAROMACHRUS MOCINNO MOCINNO De la Llave.

#### QUETZÁL.<sup>b</sup>

*Adult male*.—Upper parts, head, neck, and chest brilliant metallic green or golden green (the head and long supracaudal plumes more golden), changing to bluish green or even greenish blue in certain lights, the elongated greater wing-coverts with basal portion (partly exposed) abruptly black; greater and primary wing-coverts, alula, and six middle rectrices uniform black; three lateral rectrices (on each side) white with black shaft, the basal portion (concealed) grayish black or slate color; under parts, posterior to chest, intense geranium red, darkening into crimson or burnt carmine on upper breast; tibial and tarsal feathers black, the lower ones glossed with metallic green; bill yellow; iris dark brown; feet dusky (in dried skins); length (skins), to end of rectrices, 355–390 (371); wing, 200.5–218 (206.6); tail, 197–217.5 (205.3); longest upper tail-coverts, 650–957 (811); culmen, 20–21.5 (21); tarsus, 18–21.5 (19.2); inner anterior toe, 19–21.5 (20.4).<sup>c</sup>

*Adult female*.<sup>d</sup>—Pileum and sides of head metallic bronze-green (the color much less bright than in adult male), the loreal and latero-frontal feathers much less developed; back, scapulars, wing-coverts, rump, and upper tail-coverts bright metallic golden green, as in

<sup>a</sup> I have not seen the female of *P. m. mocinno*, which, however, undoubtedly agrees with that of *P. m. costaricensis* in this character.

<sup>b</sup> Not Quetzál, as given in the dictionaries! The Central American native pronunciation is uniformly and distinctly kã-tzál, or kã-zál.

<sup>c</sup> Fifteen specimens.

<sup>d</sup> The descriptions of the adult female and young stages are taken from specimens of *P. m. costaricensis* (which probably do not differ materially from the same plumages of *P. m. mocinno*), in order to preserve uniformity of treatment of composite species, there being no specimens of *P. m. mocinno* other than adult males in the series which I have been able to examine. The nestling described is the specimen recorded by Mr. Lawrence in his catalogue of Costa Rican birds as *Nyctibius jamaicensis* (no. 51269, coll. U. S. Nat. Mus., "San Jose"=Volcan de Irazú?, Costa Rica, Jan. 15, 1867; José C. Zeledón).

adult male, but the longer upper tail-coverts not reaching much, if any, beyond tip of tail (often falling short of tip); remiges black, the primaries broadly edged with buff; tail black, the three lateral rectrices on each side broadly white distally and on outer web (except basally), the white portion barred with dusky; chin and throat grayish brown; foreneck and chest metallic green; breast, sides, and abdomen (except extreme lower portion of the latter) plain grayish brown (nearly hair brown); extreme lower abdomen, hinder flanks, anal region, and under tail-coverts pure geranium red; thighs sooty blackish, the lower feathers glossed with metallic green; bill blackish; feet dusky (in dried skins).

*Immature male*.—Similar to the adult female, but metallic green of head, etc., brighter, bill yellow, breast, abdomen, and sides gray instead of grayish brown, and distal portion of rectrices with more white (the white portion with much fewer dusky bars).

*Young (nestling, sex not determined)*.—Pileum, hindneck, back, scapulars, rump, and upper tail-coverts plain dark sooty brown (nearly seal brown), some of the longer upper tail-coverts with a narrow mesial terminal streak of dull tawny, the scapulars with large but not well defined spots of tawny-buff; wings darker sooty brown, the coverts (except primary coverts and alula) with very large spots of tawny-buff, the remiges broadly edged with the same; four middle rectrices wholly blackish brown, the lateral rectrices (as far as developed) white; throat naked, the chin thinly covered with loose-webbed feathers of dull tawny mixed with dusky; chest dull tawny-ochraceous or clay color, rather broadly barred with dark sooty brown, these bars indistinct anteriorly but very distinct near posterior margin of chest, where the ochraceous area has a very definite convex outline; rest of under parts white suffused with buffy, especially on sides and flanks, which are rather broadly but indistinctly barred with grayish dusky; bill and feet brownish (in dried skin).

High mountains of Guatemala (San Martín, Quezaltenango; Pié de la Cuesta, San Marcos; Cerro Zunil and Calderas, Volcán de Fuego; Volcán de Agua; Chiacamán, Chinantla Mountains; near Cobán; Raxché, Chilasco, etc., Vera Paz; mountains of Santa Cruz), Honduras (south and east of Comayagua), and Chiapas; northern Nicaragua (San Rafael del Norte) ? <sup>a</sup>

*Trogon pavoninus* (not of Spix) TEMMINCK, Pl. Col., iii, 1825, pl. 372.—LESSON, *Traité d'Orn.*, 1830, 120.—WILSON, *Illustr. Zool.*, 1831, pl. 6.—DUBOIS, *Orn. Gal.*, i, 1839, 79, pl. 49.

*Trogon pavonius* GLOGER, *Hand-u. Hilfsb. Nat.* 1842, 201.

<sup>a</sup> Nicaraguan specimens, which I have not seen, may possibly be referable to *P. m. costaricensis*.

*Pharomachrus mocinno* DE LA LLAVE, Registro Trimestre, i, num. 1, Jan., 1832, 48 (Guatemala; Chiapas); Rev. et Mag. de Zool., xiii, 1861, 23-33; La Naturaleza, ii, 1874, 17, 18.—RIDGWAY, Man. N. Am. Birds, 1887, 275, footnote.

*P[haromachrus] mocinno* GRAY, Gen. Birds, iii, 1849, App., p. 30a.

*Pharomacrus mocinno* BREWER, Proc. Bost. Soc. N. H., xv, 1872, 152 (Guatemala).—GOULD, Mon. Trog., ed. 2, 1875, pl. 1 and text.—GRANT, Cat. Birds Brit. Mus., xvii, 1892, 431, part ("Mexico"; San Martín, Quezaltenango, Pié de la Cuesta, San Marcos, Cobán, Raxché, Volcán de Fuego, Volcán de Agua, and Chilasco, Guatemala).—SALVIN and GODMAN, Biol. Centr.-Am., ii, 1896, 481, part (localities in Guatemala; San Rafael del Norte, Nicaragua? *a*).—NELSON, Auk, xv, 1898, 156 (near Tumbalá and east of Tuxtla, e. Chiapas).

*Pharomachrus mociño* WÜRTEMBERG, Naumannia, 1852, 51, in text.

*P[haromacrus] mocinno* CABANIS and HEINE, Mus. Hein., iv, 1863, 211 (Volcán de Fuego).

*[Pharomacrus] mocinno* HEINE and REICHENOW, Nom. Mus. Hein. Orn., 1890, 210 (Volcán de Fuego).—SHARPE, Hand-list, ii, 1900, 146, part (Guatemala).

*[Pharomacrus] mocinna* GRAY, Hand-list, i, 1869, 85, no. 1002.

*Pharomacrus mocina* BOUCARD, Liste Ois.-récol. Guat., 1878, 25; The Hum. Bird, i, 1891, 6, 7 (Guatemala; s. Mexico; descr.; habits).

*Pharomacrus mosinno* CUBAS, Cuadro Geograf., 1884, 176 (Chiapas).

*[Calurus] mocinno* BONAPARTE, Consp. Av., i, 1850, 152.

*Trogon resplendens* GOULD, Proc. Zool. Soc. Lond., 1835, 29 (s. Mexico); 1836, 12; Isis, Bd. xxxi, 1838, 172; Mon. Trog., ed. 1, 1838, pl. 21 and text.—BONAPARTE, Proc. Zool. Soc. Lond., 1837, 101.

*Trogon (Calurus) resplendens* GOULD, Mon. Trog., ed. 1, 1838, List of Plates, sp. 21.

*Calurus resplendens* SWAINSON, Classif. Birds, ii, 1837, 338.—GOULD, Mon. Trog., ed. 1, 1838, Synop. Sp. Gen. Calurus, sp. 1.—GRAY, Cat. Fissir. Birds Brit. Mus., 1848, 45.—BURMEISTER, Syst. Ueb. Th. Bras., ii, 1856, 273, footnote.

*C[alurus] resplendens* GRAY, Gen. Birds, i, 1845, 71.

*[Trogon] paradiseus* BONAPARTE, Proc. Zool. Soc. Lond., 1837 (pub. 1838), *b* 101, in text (Vera Paz, Guatemala); in Charlesw. Mag. N. H., ii, 1838, 229-231.

*Calurus paradiseus* HARTLAUB, Verz. Mus. Brem., 1844, 12.—WÜRTEMBERG, Naumannia, 1852, 51.

*Pharomacrus paradiseus* SCLATER and SALVIN, Ibis, 1859, 132 (Calderas, Cobán, and Quezaltenango, Guatemala, above 6,000 ft.).—MOORE, Proc. Zool. Soc. Lond., 1859, 52 (Quezaltenango).—TAYLOR, Ibis, 1860, 118 (mts. near Comayagua, Honduras).—SALVIN, Proc. Zool. Soc. Lond., 1860, 374 (mts. of Santa Cruz, Guatemala; habits; descr. nest and eggs); Ibis, 1861, 138 (Vera Paz, Guatemala; habits).—OWEN, Ibis, 1861, 66, pl. 2, fig. 1, egg (mts. of Santa Cruz; descr. nest and eggs).—SCLATER, Cat. Am. Birds, 1862, 277 (Raxché and Cobán, Guatemala).—NEHRKORN, Journ. für Orn., 1889, 286 (Honduras; descr. eggs).—HARTERT, Kat. Vogelsamml. Mus. Senckenb., 1891, 135 (Mexico).

*[Pharomacrus] paradiseus* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 104, part (Guatemala).

*a* Nicaraguan specimens (which I have not seen) may be referable to *P. m. costaricensis*.

*b* Bonaparte here claims that he so named the species in 1826, but I have not been able to find the reference.



## PHAROMACHRUS MOCINNO COSTARICENSIS (Cabanis).

## COSTA RICAN QUETZÁL.

Similar to *P. m. mocinno*, but smaller, and the adult male with elongated supracaudal plumes much narrower and averaging decidedly shorter, their color usually much less golden green.

*Adult male*.—Length to tip of rectrices (skins), 330–375 (350); wing, 189–206 (199); tail, 179.5–195.5 (187.4); longest upper tail-coverts, 480–825 (660.5); culmen, 20.5–24 (21.6); tarsus, 18–20 (18.5); inner anterior toe, 18–21.5 (19.9).<sup>a</sup>

*Adult female*.—Length (skins), 345–378 (356); wing, 193–208 (198.4); tail, 184–216 (196.8); culmen, 21–24.5 (22.4); tarsus, 18–20.5 (18.7); inner anterior toe, 18–22 (19.7).<sup>b</sup>

Higher mountains of Costa Rica (Volcán de Irazú; Volcán de Turrialba; Coliblanco; Volcán de Poás; Cerro de la Candelária; “Cartago;” Naranjo de Cartago; “San José;” La Palma de San José; El Zarcero de Alajuela; Rancho Redondo; Quebrada Honda; Cervantes; Navarro) and western Panamá (Boquete; Calovévora; Calobre; David; Volcán de Chiriquí).

*Pharomacrus mocinno* (not *Pharomachrus m.* De la Llave) SCLATER, Proc. Zool. Soc. Lond., 1856, 139 (David, Chiriquí, Panamá).—SALVIN, Proc. Zool. Soc. Lond., 1867, 151 (Boquete, Chiriquí); 1870, 202 (Calobre, Calovévora, and Volcán de Chiriquí; crit.).—SALVADORI, Atti Torino, 1868, 183 (Costa Rica).—GRANT, Cat. Birds Brit. Mus., xvii, 1892, 431, part (“San José,” Costa Rica; Volcán de Chiriquí and Calovévora, w. Panamá).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1896, 481, part (localities in Costa Rica and western Panamá; San Rafael del Norte, Nicaragua?).<sup>c</sup>—SALVADORI and FESTA, Boll. Mus. Zool., etc., Torino, xiv, 1899, no. 339, 8 (Chiriquí).

<sup>a</sup> Seventeen specimens. The longest supracaudal plume in a series of one hundred adult males from Costa Rica examined at one time measured 774.5 mm., while the longest in another series of seventy-seven adult males measured 787 mm. In none of the entire lot of nearly two hundred adult males examined were these plumes nearly as wide as in the average of Guatemalan examples, usually not more than about half as wide.

<sup>b</sup> Thirteen specimens.

| Locality.                                                        | Wing. | Tail. | Longest upper tail-coverts. | Culmen. | Tarsus. | Inner anterior toe. |
|------------------------------------------------------------------|-------|-------|-----------------------------|---------|---------|---------------------|
| MALES.                                                           |       |       |                             |         |         |                     |
| Seven adult males from Costa Rica.....                           | 201.8 | 189.5 | 647.1                       | 21.1    | 18.3    | 19.5                |
| Ten adult males from western Panamá.....                         | 196.9 | 185.9 | 668.6                       | 21.8    | 18.7    | 20.2                |
| Two adult males ( <i>P. m. mocinno</i> ) from Honduras.....      | 206   | 200.5 | 650                         | .....   | .....   | .....               |
| Fifteen adult males ( <i>P. m. mocinno</i> ) from Guatemala..... | 206.6 | 206.3 | 822.1                       | 20.8    | 19.2    | 20.4                |
| FEMALES.                                                         |       |       |                             |         |         |                     |
| Seven adult females from Costa Rica.....                         | 199.1 | 198.1 | .....                       | 22.5    | 18.8    | 19.8                |
| Two adult females from Panamá.....                               | 195.2 | 189.2 | .....                       | 21.5    | 18.5    | 19                  |

<sup>c</sup> I have not seen Nicaraguan specimens, which may be referable to *P. m. mocinno*.

- [*Pharomacrus*] *mocinno* SHARPE, Hand-list, ii, 1900, 146, part (Panamá).  
*Pharomacrus mo-cinno* LAWRENCE, Ann. Lyc. N. Y., ix, 1868, 120 (Costa Rica).—FRANTZIUS, Journ. für Orn., 1869, 313 (Turrialba, Cervantes, and Volcán de Irazú, Costa Rica).  
*Ph[aromacrus] costaricensis* CABANIS, Journ. für Orn., 1869, 313, footnote, in text (Costa Rica).  
*Pharomacrus costaricensis* GOULD, Mon. Trog., ed. 2, 1875, in text to pl. 1.—BOUCARD, Rowley's Orn. Misc., iii, 1877, 21.—ZELEDÓN, Proc. U. S. Nat. Mus., viii, 1885, 109 (Costa Rica); Anal. Mus. Nac. Costa Rica, i, 1887, 120 (El Zarcero de Alajuela, La Palma de San José, and Faldas de Irazú, Costa Rica).  
[*Pharomacrus*] *costaricensis* HEINE and REICHENOW, Nom. Mus. Hein. Orn., 1890 210 (Chiriquí).  
*Pharomacrus mocinno*, var. *costaricensis* BOUCARD, Proc. Zool. Soc. Lond., 1878, 48 (Volcán de Irazú, Navarro, Candelária, and Naranjo de Cartago, Costa Rica; habits).  
*Pharomacrus mocina*, . . . var. *costaricensis* BOUCARD, Rowley's Orn. Misc., iii, 1877 21; The Hum. Bird, i, 1891, 6, 7 (Costa Rica; Veragua), 18 (descr. female).  
*Pharomacrus mocinno costaricensis* RIDGWAY, Proc. U. S. Nat. Mus., v, Feb. 28, 1883, 497 (Volcán de Irazú; crit.), 501 (mts. near San José).—BANGS, Proc. New Engl. Zool. Club, iii, 1902, 31 (Boquete and Volcán de Chiriquí, 4,000–7,000 ft.).—ALFARO, Paginas Ilustradas, i, 1904, 531, in text.—CARRIKER, Ann. Carnegie Mus., vi, 1910, 556 (highlands of Costa Rica; habits).—FERRY, Pub. 146, Field Mus. N. H., orn. ser., i, no. 6, 1910, 264 (Coliblanco, Costa Rica; habits).  
*Pharomacrus paradiseus* (not *Trogon paradiseus* Bonaparte) CABANIS, Journ. für Orn., 1862, 175 (Costa Rica).  
*Nyctibius jamaicensis*? [!] LAWRENCE, Ann. Lyc. N. Y., ix, 1868, 120 (San José, Costa Rica;=nestling!)

### Genus LEPTUAS Cabanis and Heine.

- Euptilotis* <sup>a</sup> (not *Euptilotus* Reichenbach, 1850 <sup>b</sup>) GOULD, Mon. Trog., ed. 2, pt. 1 1858, text to pl. 6. (Type, *Trogon neoxenus* Gould.)  
*Eupltlotis* (typographical error) SCLATER and SALVIN, Nom. Av. Neotr., 1873, 104.  
*Leptuas* <sup>c</sup> CABANIS and HEINE, Mus. Hein., iv, Heft. 1, Feb., 1863, 185, 206. (Type, *Trogon neoxenus* Gould.)  
*Septuas* (typographical error) GOULD, Mon. Trog., ed. 2, Introd., 1875.

Large Trogons related to *Pharomachrus*, but bill more slender, depressed basally, with gonys relatively much longer and interramal space shorter and narrower; loreal feathers retrorse (instead of antrorse or erect); feathers on sides of occiput elongated, very slender, forming filamentous tufts; middle wing-coverts broadly rounded, not elongated, and adult male with longer upper tail-coverts falling far short of tip of tail.

Bill rather small, the moderately arched culmen much depressed and broadly rounded basally; tomia smooth (nonserrate), but with a distinct subterminal notch on both maxilla and mandible, the tip of

<sup>a</sup> *Eῶ*, well; *πτίλον*, a feather; *ὠτός* (*ōtós*), ear. (Gould.)

<sup>b</sup> Av. Syst. Nat., pl. 54. (Pycnonotidæ.)

<sup>c</sup> "Von λεπτός (zart, fein) und ὠς (Ohr)." (Cabanis and Heine.)

latter forming a distinct ascending point; gonys much more than half as long as mandibular rami, the distal width of the interramal space about equal to its length. Nostril oval (narrower anteriorly), longitudinal, overhung by a broad operculum. Rictal bristles minute or obsolete, but feathers of loreal, malar, and mental antiæ with distinct antrorse bristly tips, those of the chin more slender and strongly recurved; loreal feathers normal; feathers on sides of occiput (supra-auricular region) elongated, very slender, forming a narrow, filamentous tuft; middle wing-coverts very large, very broadly rounded; upper tail-coverts elongated, distinctly outlined, those of the adult male reaching to beyond middle of tail, broadly rounded terminally. Seventh primary longest, the sixth a little shorter, the tenth less than half as long as seventh. Tail shorter than wing, graduated for more than one-third its length, the rectrices rounded at tip, the lateral ones perceptibly narrowing terminally; tarsus decidedly shorter than longest toe, feathered for upper portion.

*Coloration*.—Chest and upper parts, including wing-coverts, metallic green, the middle rectrices glossy blue-black, the remiges slaty; lateral rectrices broadly tipped with white; breast, abdomen, and under tail-coverts red; adult female similar, but with head and chest slate-grayish.

*Range*.—Mountains of northwestern Mexico. (Monotypic.)

#### LEPTUAS NEOXENUS (Gould).

##### EARED TROGON.

*Adult male*.—Pileum dark metallic bronze-green or greenish bronze; rest of head, including chin and throat, dull black, faintly glossed (except on lores) with bluish; back, scapulars, and broad tips to wing-coverts bright metallic green to greenish bronze, passing into bright bluish green on rump and upper tail-coverts; six middle rectrices and basal portion of lateral rectrices dark metallic blue, the three lateral pairs of rectrices broadly tipped with white, this occupying the terminal third (approximately) on outermost rectrix; remiges and greater and primary wing-coverts slate-blackish, the greater coverts and secondaries (especially the former) more or less distinctly margined (narrowly) with metallic green, the outer webs of primaries (except innermost) more grayish, passing into grayish white basally; middle and lesser wing-coverts abruptly slate-blackish basally, this largely exposed; chest bright metallic bronze-green, passing into a more bluish hue toward blackish of throat; rest of under parts bright, pure red (geranium red), the thighs dark slate color; bill bluish gray for basal half or more, blackish terminally; feet horn color or dusky (in dried skins); length (skins), 320–351 (332); wing, 181–200 (191.6); tail, 161–179.5 (171.2); culmen,



17–19.5 (18.4); tarsus, 15.5–17.5 (16.4); inner anterior toe, 17.5–19.5 (18.4).<sup>a</sup>

*Adult female*.—Upper parts and tail as in adult male, but pileum and remiges slate color; sides of head, chin, and throat brownish slate-gray or mouse gray, passing into light grayish brown on chest and upper breast, the red of posterior under parts less intense than in adult male; bill and feet as in adult male; length (skins), 307–350 (327); wing, 183.5–198.5 (192.5); tail, 157–177 (165); culmen, 17–19.5 (18.1); tarsus, 14.5–17 (16.2); inner anterior toe, 17.5–20 (18.8).<sup>b</sup>

Mountains of northwestern Mexico, in States of Chihuahua (near Colonia Garcia; Sierra Madre near Guadalupe y Calvo; Durasno; Pacheco; La Pinita; Mound Valley), Zacatecas (Plateado; Sierra Madre; Sierra de Valparaiso), and Michoacán (Patambán; Mount Tancitaro), and Territory of Tepic (Santa Teresa; Sierra de Nayarit, 8,000 feet).

*Trogon neoxenus* GOULD, Mon. Trog., ed. 1, 1838, pl. 25 and text (Mexico; coll. J. Gould).

*Trogon (Calurus) neoxenus* GOULD, Mon. Trog., ed. 1, 1838, List of Plates, sp. 25.

*Calurus neoxenus* GOULD, Mon. Trog., ed. 1, 1838, Synop. Genus Calurus, sp. 5.—

GRAY, Cat. Fissir. Birds Brit. Mus., 1848, 46.—BONAPARTE, Consp. Av., i, 1850, 152.—BURMEISTER, Syst. Ueb. Th. Bras., ii, 1856, 273.

*C[alurus] neoxenus* GRAY, Gen. Birds, i, 1845, 71.

*[Cosmurus] neoxenus* BONAPARTE, Consp. Voluc. Zygod., 1854, 14.

*Euptilotis neoxenus* GOULD, Mon. Trog., ed. 2, 1858, pl. 6 and text.—GRANT, Cat.

Birds Brit. Mus., xvii, 1892, 437 (Sierra de Valparaiso, Zacatecas; Sierra de Nayarit, 8,000 ft., Tepic).—ALLEN, Bull. Am. Mus. N. H., v, 1893, 34 (La Pinita, n. Chihuahua).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1896, 485.

*[Euptilotis] neoxenus* SHARPE, Hand-list, ii, 1900, 147.

*[Euptilotis] neoxenus* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 104.

*[Leptuas] neoxenus* CABANIS and HEINE, Mus. Hein., iv, Feb., 1863, 206.

*[Pharomacrus] neoxenus* GRAY, Hand-list, i, 1869, 85, no. 1008.

### Genus CURUCUJUS Bonaparte.

*Curucujus* BONAPARTE, Atti Italiano, no. 8, May, 1854 (Consp. Voluc. Zygod., 1854, p. 14). (Type, as fixed by Gray, 1855, "*Trogon curucui* Linn[æus]" i. e. *T. melanurus* Swainson.)

*Troctes* <sup>c</sup> (not of Burmeister) CABANIS and HEINE, Mus. Hein., iv, Feb., 1863, 201. (To replace *Curucujus* Bonaparte, on grounds of purism.)

*Eutroctes* <sup>d</sup> (not of Zimmerman) HEINE, Journ. für Orn., xi, Sept., 1863, 358, in text. (To replace *Troctes* Cabanis and Heine, preoccupied.)

Large, strongly-built Trogons with heavy, strongly serrate bill, vermiculated wing-coverts and secondaries, and with the lateral rectrices uniform dusky or else (in one species) narrowly barred (not tipped) with white.

<sup>a</sup> Ten specimens.

<sup>b</sup> Nine specimens.

<sup>c</sup> From "*τροκτης* (= *τρώγων*, Nager)." (Cabanis and Heine.)

<sup>d</sup> "*Von εῦ*, wohl, schön und *τρώκτης* (= *τρώγων*)."<sup>22</sup> (Heine.)

Bill very large and strong, as deep as broad at base, the culmen strongly arched, not distinctly if at all ridged; gonys shorter than mandibular rami, strongly ascending terminally; interramal space as broad, distally, as long, broadly rounded anteriorly; tomia distinctly serrate for anterior half, the notches and tooth-like points deeper on mandible than on maxilla, the tip of the mandible forming a distinct ascending point. Nostril rounded, nonoperculate, concealed by an antrorse tuft of bristly plumes. Feathers of chin and malar apex bristly, antrorse, the former strongly recurved. Feathering of head normal; seventh, eighth, or seventh and sixth primaries longest, the tenth (outermost) less than half as long as the longest; tail slightly shorter to decidedly longer than wing, graduated for one-fourth its length or slightly more, the lateral rectrices not truncate at tip nor distinctly if at all tapering terminally, the terminal outline of inner web strongly oblique, the middle rectrices subtruncate. Tarsus decidedly shorter than longest toe, naked for more than lower half; toes very strong, the two anterior ones united for more than half their length.

*Coloration*.—Adult males with head, neck, chest, and upper parts metallic bronze-green to bluish green (sometimes blue on rump, upper tail-coverts and middle rectrices), the wing-coverts and secondaries finely vermiculated with black and grayish white, the three outermost rectrices (on each side) plain blackish or slaty (in one species) with narrow white bars; under parts, posterior to chest, bright red; adult females with upper parts slate-color, the anterior under parts slate-gray. Young very different from adults (conspicuously spotted).

*Range*.—Southern Mexico to Amazon Valley. (Four species.)

KEY TO THE SPECIES AND SUBSPECIES OF CURUCUJUS.

- a. Upper parts (except wings) and chest metallic green (sometimes bluish on rump and upper tail-coverts); maxilla yellow or orange. (*Adult males*.)
- b. Lateral rectrices uniform blackish slate (the outer web minutely freckled with pale grayish basally).
- c. No white on upper breast. (Southeastern Mexico to eastern Panamá.)

*Curucujus massena*, adult male (p. 744).

- cc. A white band across upper breast (next to green of chest). (*Curucujus melanurus*.)

- d. Smaller (wing 147–165, averaging 155.3; tail 143–175, averaging 160.1). (Colombia to western Ecuador, Amazon Valley, and Cayenne.)

*Curucujus melanurus melanurus*, adult male (extralimital).<sup>a</sup>

<sup>a</sup> *Trogon melanurus* Swainson, Anim. in Menag., pt. iii, Jan. 1, 1838, 329 (Demerara, Brit. Guiana); Gould, Mon. Trog., ed. 1, 1838, text to pl. 18; ed. 2, 1875, pl. 29 and text; Grant, Cat. Birds Brit. Mus., xvii, 1892, 472.—[*Curucujus*] *melanurus* Bonaparte, Consp. Voluc. Zygod., 1854, 14.—[*Troctes*] *melanurus* Cabanis and Heine, Mus. Hein., iv, 1863, 201.—*Trogon nigricaudata* Gould, Mon. Trog., ed. 1, pl. 18.—[*Troctes*] *mesurus* Cabanis and Heine, Mus. Hein., iv, Feb., 1863, 202 (Babahoyo, w. Ecuador; coll. Heine Mus.).

*dd.* Larger (wing 157–167, averaging 162.7; tail 165.5–181.5, averaging 171.3). (Eastern Panamá and northern Colombia.)

***Curucujus melanurus macrourus***, adult male (p. 747).

*bb.* Lateral rectrices narrowly barred with white. (Costa Rica and western Panamá.)..... ***Curucujus clathratus***, adult male (p. 749).

*aa.* Upper parts and chest slate color or slate-gray; maxilla black. (*Adult females.*)

*b.* Lateral rectrices plain blackish slate; breast slate-gray.

*c.* Larger (wing 165–185, tail 163–186).

***Curucujus massena***, adult female (p. 744).

*cc.* Smaller (wing 148.5–160.5, tail 154–164.5). (*Curucujus melanurus.*)

*d.* Smaller (wing 148.5–155, averaging 154, tail 154–159.5, averaging 156.4).

***Curucujus melanurus melanurus***, adult female (extralimital).

*dd.* Larger (wing 155.5–157.5, averaging 156, tail 161.5–164.5, averaging 163).

***Curucujus melanurus macrourus***, adult female (p. 748).

*bb.* Lateral rectrices narrowly barred with white; breast brown.

***Curucujus clathratus***, adult female (p. 749).

### CURUCUJUS MASSENA (Gould).

#### MASSENA TROGON.

*Adult male.*—Above bright metallic green, usually golden green on back, scapulars, and upper rump, sometimes more bluish green, or even intermixed with blue or violet-blue on lower rump and upper tail-coverts; four middle rectrices metallic green or bronze-green, broadly, but not sharply, tipped with black, the inner webs of second and third (from middle) and both webs of lateral rectrices uniform black, the outer web of fourth glossed with bronze-green basally, that of outermost rectrix and edges of next two toward base usually freckled or sprinkled with pale grayish, the under surface of the tail slate color, the rectrices tipped with black; wing-coverts (except anterior portion of lesser covert area) and secondaries delicately vermiculated with black and white; alula, primary coverts, and primaries dull black or slate-black, the longer quills edged with pale grayish or grayish white proximally; loreal, orbital, auricular and malar regions, chin, and throat, dull black; chest bright metallic green or bronze-green; remaining under parts pure geranium red, the thighs sooty blackish; bill deep orange or orange-yellow; iris dark yellow;<sup>a</sup> naked eyelids sky blue;<sup>b</sup> feet (in dried skins), brownish or horn color; length (skins), 298–349 (319); wing, 163–181 (173.2); tail, 161–186 (170.8); culmen, 23–27 (24.5); tarsus, 15.5–18 (16.4); inner anterior toe, 15.5–19.5 (17.6).<sup>c</sup>

*Adult female.*—Head, neck, back, scapulars, rump, upper tail-coverts, chest, and breast plain slate color, darker on loreal, orbital, auricular, and malar regions, chin, and throat, paler on lower breast, where sometimes indistinctly barred; rest of under parts pure geranium red, the thighs blackish; tail slate-black, sometimes faintly darker than color of back, etc., the under surface of rectrices slate-

<sup>a</sup> Richmond.

<sup>b</sup> Nutting.

<sup>c</sup> Twenty-eight specimens.



glossed with violaceous, the middle rectrices more slaty but much color tipped with black; wings blackish slate or sooty slate, the coverts and secondaries minutely freckled with paler, the longer primaries edged with white basally; maxilla black, with extreme basal lower portion, together with mandible, orange; feet as in adult male; length (skins), 294-353 (319); wing, 165-185.5 (174.1); tail, 160.5-186 (171.9); culmen, 23-25.5 (24.2); tarsus, 15-17.5 (16.2); inner anterior toe, 16.5-19 (17.5).<sup>a</sup>

*Immature male*.—Similar to the adult male, but lateral rectrices tipped with white and narrowly barred on at least distal portion of outer web and, usually, on distal portion of inner web (except on third from outside) with white, middle rectrices much duller metallic bronze-green and without black tip, secondaries (at least distal ones) spotted or mottled with dull white or buffy white along edges, and bill more brownish orange or yellowish.

*Immature female*.—Similar to the adult female, but lateral rectrices and secondaries marked with white, as in immature male.

*Young (nestling)*.<sup>b</sup>—Above plain tawny-brown (near to tawny-olive), slightly darker on pileum, passing into tawny on upper tail-coverts; general color of wings dull black, except on coverts and proximal secondaries, where the prevailing color is buff, broken by irregular bars of black, the buff forming very large roundish spots on proximal greater coverts and terminal portion of proximal secondaries.

<sup>a</sup> Twenty-four specimens.

| Locality.                                                                | Wing. | Tail. | Culmen. | Tarsus. | Inner anterior toe. |
|--------------------------------------------------------------------------|-------|-------|---------|---------|---------------------|
| MALES.                                                                   |       |       |         |         |                     |
| Two adult males from Vera Cruz.....                                      | 175.7 | 174.7 | 27      | 16.5    | 18.5                |
| Five adult males from Chiapas (2), Guatemala (2), and Honduras (1).....  | 179.4 | 176.7 | 25.5    | 16.5    | 18.2                |
| Ten adult males from Costa Rica.....                                     | 172.5 | 169.9 | 24.3    | 16.6    | 17.7                |
| Eleven adult males from Panamá.....                                      | 170.6 | 168.9 | 24.1    | 16.1    | 17.3                |
| FEMALES.                                                                 |       |       |         |         |                     |
| Four adult females from Vera Cruz (2), Oaxaca (1), and Campeche (1)..... | 181.6 | 177.2 | 25.2    | 17      | 17.7                |
| Three adult females from Guatemala (2) and Honduras (1).....             | 179.7 | 179.2 | 24.7    | 16.3    | 17.5                |
| Ten adult females from Costa Rica.....                                   | 172.9 | 170.4 | 23.9    | 16.3    | 17.3                |
| Seven adult females from Panamá.....                                     | 169.2 | 167.5 | 23.9    | 15.7    | 17.6                |

Specimens from eastern Panamá are smaller than those from Veragua and Chiriquí, a male and female from Colón being the smallest in the entire series, their measurements being as follows: Adult male: Wing, 163; tail, 165; culmen, 23; tarsus, 17; inner anterior toe, 17. Adult female: Wing, 165; tail, 175; culmen, 24; tarsus, 16.5; inner anterior toe, 17.5.

<sup>b</sup> Described from no. 155132, coll. U. S. Nat. Mus. (Biol. Surv. Coll.), mountains near Santo Domingo, Oaxaca, June 16, 1895; Nelson and Goldman.

ries (tertiaries); malar region, chin, throat, and chest plain wood brown or isabella color, the remaining under parts white, heavily clouded or spotted on breast and upper abdomen, with darker brown, the under tail-coverts tinged with buff; primaries as in adults, the rectrices (very slightly developed) apparently as in immature female (as described above).

Southeastern Mexico, in States of Vera Cruz (Playa Vicente; Uvero; Motzorongo; Achotál; Buena Vista), Oaxaca (mountains near Santo Domingo; Chimalapa), Tabasco (Teapa), Campeche (Apazote), and Chiapas (Palenque), and southward through Guatemala (Chiséc; Choctúm; Raxché; Telemán; Los Amates, Yzabál), British Honduras (Western District; San Felipe; Cayo), Honduras (La Cumbre; Chasníguas; Omoa; San Pedro; Rio Segóvia), Nicaragua (Greytown; Los Sábalos; Chontales; Rio Escondido; San Carlos; Rana; Virgin Bay), Costa Rica (San Carlos; La Palma de Nicoya; Bebedero; Volcán de Miravalles; Pigres; Pozo Azul de Pirrís; Boruca; Pozo del Rio Grande; La Vijagua; Lagarto; Bonilla; Guayabo; Turrialba; Jiménez; Carrillo; Tucurríqui; La Balsa; San José; Naranjo de Cartago; Angostura; Rio Sísola, Talamanca; Talamanca; Rio Frio) to Panamá (Divala; Volcán de Chiriquí; Cordillera de Tolé; Santiago de Verágua; Bugaba; Panamá; Lion Hill; Colón).

*Trogon massena* GOULD, Mon. Trog., ed. 1, 1838, pl. 16 and text (Guatemala; coll. J. Gould).—GRAY, Cat. Fissir. Birds Brit. Mus., 1848, 40 (Mexico; Honduras).—SCLATER, Proc. Zool. Soc. Lond., 1859, 387 (Playa Vicente, Vera Cruz); Cat. Am. Birds, 1862, 277 (Guatemala).—SCLATER and SALVIN, Ibis, 1859, 132 (Honduras); Proc. Zool. Soc. Lond., 1864, 364 (Lion Hill, Panamá).—MOORE, Proc. Zool. Soc. Lond., 1859, 53 (Omoa and San Pedro, Honduras).—(?)CASSIN, Proc. Ac. Nat. Sci. Phila., 1860, 135 (Rio Truando and delta of Rio Atrato, n. w. Colombia).—SALVIN, Ibis, 1861, 146 (Honduras); 1872, 321 (Chontales, Nicaragua); Proc. Zool. Soc. Lond., 1867, 151 (Cordillera de Tolé and Santiago de Verágua, Panamá); 1870, 202 (Bugaba and Volcán de Chiriquí, Panamá).—CABANIS, Journ. für Orn., 1862, 174 (Costa Rica; crit.).—LAWRENCE, Ann. Lyc. N. Y., vii, 1862, 290 (Lion Hill, Panamá); viii, 1865, 183 (Greytown, Nicaragua); ix, 1868, 119 (Angostura and Tucurríqui, Costa Rica).—FRANTZIUS, Journ. für Orn., 1869, 313 (Costa Rica).—BOUCARD, Proc. Zool. Soc. Lond., 1878, 48 (San Carlos, Costa Rica); Liste Ois. récol. Guat., 1878, 26.—SUMICHRAST, La Naturaleza, v, 1881, 239 (Uvero, Vera Cruz).—NUTTING, Proc. U. S. Nat. Mus., v, 1882, 400 (La Palma de Nicoya, Costa Rica; habits); vi, 1883, 407 (Los Sábalos, Nicaragua).—ZELEDÓN, Proc. U. S. Nat. Mus., viii, 1885, 109 (Costa Rica); Anal. Mus. Nac. Costa Rica, i, 1887, 120 (Pozo Azul de Pirrís, Jiménez, and Naranjo de Cartago, Costa Rica).—RIDGWAY, Proc. U. S. Nat. Mus., x, 1887, 591 (Rio Segóvia, Honduras); xiv, 1891, 476 (Pacuare and Jiménez, Costa Rica; crit.).—RICHMOND, Proc. U. S. Nat. Mus., xvi, 1893, 514 (Rio Escondido, Nicaragua; habits).—GRANT, Cat. Birds Brit. Mus., xvii, 1892, 474.—CHERRIE, Expl. Zool. Merid. Costa Rica, 1893, 47 (Lagarto and Boruca, Costa Rica).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1896, 503.—UNDERWOOD, Ibis, 1896, 444 (Volcán de Miravalles, Costa Rica).—DEARBORN, Pub. 125, Field Mus. N. H.,

- 1907, 88 (Los Amates, Guatemala).—BANGS, Proc. New Engl. Zool. Club, ii, 1900, 19 (Loma del León, Panamá); Auk, xxiv, 1907, 294 (Boruca and Pozo del Rio Grande, Costa Rica).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 562 (Costa Rica; crit.; habits).—FERRY, Pub. 146, Field Mus. N. H., orn. ser., i, no. 6, 1910, 265 (Guayabo, Costa Rica; crit.).
- T[rogon] massena* GRAY, Gen. Birds, i, 1845, 70.—BONAPARTE, Consp. Av., i, 1850, 149.
- [*Trogon*] *massena* GRAY, Hand-list, i, 1869, 81, no. 951.—SUMICHRIST, Mem. Bost. Soc. N. H., i, 1869, 560 (hot region of Vera Cruz).—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 104.—SHARPE, Hand-list, ii, 1900, 149.
- Trogon massenæ* SCLATER, Proc. Zool. Soc. Lond., 1858, 96 (s. Mexico).
- [*Curucujus*] *massena* BONAPARTE, Consp. Voluc. Zygod., 1854, 14.
- T[roctes] massenæ* CABANIS and HEINE, Mus. Hein., iv, March, 1863, 204 (Mexico).
- Troctes massenæ* GOULD, Mon. Trog., ed. 2, 1869, pl. 31 and text (Guatemala).
- E[utroctes] massenæ* HEINE, Journ. für Orn., xi, Sept., 1863, 358.
- [*Eutroctes*] *massenæ* HEINE and REICHENOW, Nom. Mus. Hein. Orn., 1890, 210 (Mexico).
- T[roctes] hoffmanni* CABANIS and HEINE, Mus. Hein., iv, March, 1863, 204, footnote (in text) (Costa Rica; coll. Berlin Mus.).
- E[utroctes] hoffmanni* HEINE, Journ. für Orn., xi, Sept., 1863, 358.
- [*Trogon*] *hoffmanni* GRAY, Hand-list, i, 1869, 81, no. 954.
- Trogon erythronotus* MÜLLER, Reis. in Mex., i, 1864, 229 (Mexico); iii, 1865, 562.
- [*Trogon*] *erythronotus* GRAY, Hand-list, i, 1869, 83, no. 979.

### CURUCUJUS MELANURUS MACROURUS (Gould).

#### LARGE-TAILED TROGON.

Similar to *C. massena*, but smaller, with relatively much longer tail, the adult male with a narrow white band between the metallic green of chest and red of breast; quite similar in coloration to *C. m. melanurus*,<sup>a</sup> but averaging decidedly larger.

*Adult male*.—Above bright metallic green, more or less golden green on back, scapulars, and upper rump, more bluish green (sometimes greenish blue) on lower rump and upper tail-coverts; middle pair of rectrices dark metallic bluish green or greenish blue rather broadly (but not sharply) tipped with black, the second and third pairs black, with outer portion of outer web (more or less broadly) dark metallic green tipped with black; remaining rectrices black, their outer webs finely freckled or sprinkled along edge, especially toward base, with pale grayish or dull grayish white; anterior lesser wing-coverts bright metallic green or golden green, the remaining coverts, together with secondaries, delicately vermiculated with black and white; rest of wing dull black or slate-black, the longer primaries edged with white (except terminally); loreal, orbital, auricular, and malar regions, chin, and upper throat black; lower throat and chest bright metallic green or golden green, margined posteriorly by a band or line of white across upper breast, this white band sometimes narrowly barred with blackish; rest of under parts pure geranium red, the thighs slate-black or blackish slate; bill yellow (orange in

<sup>a</sup> See p. 743.



life?); naked orbital ring yellowish (orange in life?); feet dusky horn color (in dried skins); length (skins), 294–317 (305); wing, 157–167 (162.6); tail, 165.5–181.5 (172.6); culmen, 22–24.5 (23.1); tarsus, 15–17 (15.7); inner anterior toe, 16.5–17.5 (17).<sup>a</sup>

*Adult female.*<sup>b</sup>—Above plain slate color, the tail darker and more brownish slate, the larger wing-coverts and secondaries usually minutely freckled or vermiculated with paler, the primaries more brownish slate or dull blackish slate, their outer web broadly edged with white passing into gray terminally; sides of head, chin, and throat dull brownish slate, darker on lores and anterior margin of chin; chest slate-gray passing into paler gray (nearly no. 7 gray) on breast and sides, the lower portion of breast more or less distinctly barred or vermiculated; rest of under parts geranium red, paler on under tail-coverts; thighs blackish slate; under surface of tail brownish slate, the rectrices narrowly tipped with darker; maxilla black, with lower basal portion, together with mandible yellow (orange in life?); feet dusky horn color (in dried skins); length (skins), 293; wing, 155.5–175.5 (156.5); tail, 161.5–174.5 (163); culmen, 20–23.5 (21.8); tarsus, 14–15.5 (14.7); inner anterior toe, 15–15.5 (15.2).<sup>c</sup>

Eastern Panamá (Darién; Panamá; Lion Hill; Paraiso; Rio Cianiati) and northern Colombia (Rio Truando; delta of Rio Atrato; Cartagena; Cauca Valley; Remédios and Nechi, Antioquia).

*Trogon macroura* GOULD, Mon. Trog., ed. 1, 1838, pl. 17 and text ("Mexique;" Caracas, Venezuela).—GRAY, List Fissir. Birds Brit. Mus., 1848, 41.—LAWRENCE, Ann. Lyc. N. Y., vii, 1862, 290 (Lion Hill, Panamá).

*T[rogon] macrourus* GRAY, Gen. Birds, i, 1845, 70.

*Trogon macrourus* CASSIN, Proc. Ac. Nat. Sci. Phila., 1860, 135, footnote (Rio Truando and delta of Rio Atrato, n. w. Colombia).

*T[rogon] macrurus* BONAPARTE, Cons. Av., i, 1850, 150 ("Mexico").

*Trogon macrurus* SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1864, 364 (Lion Hill, Panamá); 1879, 535 (Remédios and Nechi, Antioquia, Colombia).—GOULD, Mon. Trog., ed. 2, 1875, pl. 30 and text.—GRANT, Cat. Birds Brit. Mus., xvii, 1892, 474 (Panamá and Paraiso Station, Panamá; Remédios and Nechi, Colombia).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1896, 502.—SALVADORI and FESTA, Boll. Mus. Zool., etc., Torino, xiv, 1899, no. 339, 8 (Rio Cianiati, Panamá).

*[Trogon] macrurus* GRAY, Hand-list, i, 1869, 81, no. 950.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 104.—SHARPE, Hand-list, ii, 1900, 149.

*Trogon melanurus macrurus* BANGS, Proc. New Engl. Zool. Club, ii, Sept. 20, 1900, 19 (Loma del León, Panamá).

*[Curucujus] macrurus* BONAPARTE, Cons. Volucr. Zygod., 1854, 14.

*T[roctes] macrurus* CABANIS and HEINE, Mus. Hein., iv, 1863, 203 (Cartagena, Colombia).

<sup>a</sup> Seven specimens.

<sup>b</sup> I am able to distinguish females of this species from those of *C. massena* (both occurring together on the Isthmus of Panamá) only by its smaller and relatively narrower bill. The coloration seems to be precisely the same except this, the bill is more yellow (less orange).

<sup>c</sup> Three specimens.

*E[utroctes] macrurus* HEINE, Journ. für Orn., xi, Sept., 1863, 358.

*[Eutroctes] macrurus* HEINE and REICHENOW, Nom. Mus. Hein. Orn., 1890, 210 (Cartagena).

### CURUCUJUS CLATHRATUS (Salvin).

#### LATTICE-TAILED TROGON.

Much like *C. massena*, but smaller, lateral rectrices crossed by narrow lines of white, and adult female with lower breast light brown instead of gray.

*Adult male*.—Above nearly uniform metallic green or golden or bronzy green, the upper tail-coverts rarely more bluish, but middle pair of rectrices usually more bluish green (sometimes greenish blue), rather broadly, but not sharply, tipped with black; inner web of second and third pairs of rectrices (from middle) black, the outer web metallic green, bluish green, or greenish blue, tipped with black; remaining rectrices black, crossed on outer web and distal portion of inner web with narrow lines of white, the outermost rectrix with greater portion of inner web thus barred; anterior lesser wing-coverts metallic green or bronze-green, the remaining coverts and the secondaries delicately vermiculated with black and white; remainder of wing dull black or blackish slate, the longer primaries edged with grayish white, this broken into minute freckling on distal portion; loreal, orbital, auricular, and malar regions, chin and throat black; chest metallic green or golden-green; remaining under parts pure geranium red, the thighs black or dark sooty slate, the longer feathers sometimes narrowly tipped with pinkish; bill yellow (orange in life?); iris brown;<sup>a</sup> feet brownish or horn color (in dried skins); length (skins), 285–302 (295);<sup>b</sup> wing, 152–165 (159); tail, 148.5–160 (153.5); culmen, 20–21.5 (20.8); tarsus, 14.5–15.5 (15.1); inner anterior toe, 14.5–17.5 (15.5).<sup>c</sup>

*Adult female*.—Pileum blackish slate; remaining upper parts slate color, the middle rectrices darker and more brownish slate, narrowly and rather indistinctly tipped with blackish; rest of tail as in adult male; wings dull blackish slate, the wing-coverts and secondaries minutely and rather indistinctly vermiculated with pale grayish, the longer primaries edged with white; loreal, orbital, auricular, and malar regions, chin, and throat dark sooty; chest slate color, passing, through dull slate-gray, into light raw umber or wood brown, the posterior portion sometimes faintly barred; rest of under parts geranium red, the thighs blackish or sooty; maxilla blackish, with lower basal portion, together with mandible dull yellow; feet as in adult male; length (skins), 278–285 (282); wing, 151–165 (158.7);

<sup>a</sup> Heyde and Lux, manuscript.

<sup>b</sup> Three specimens.

<sup>c</sup> Nine specimens.

tail, 152-154 (153.2); culmen, 19-20.5 (19.8); tarsus, 15.5-16 (15.7); inner anterior toe, 15.5-16 (15.8).<sup>a</sup>

Costa Rica (Guápiles; Angostura; Carrillo; Bonilla; La Vijagua) and Panamá (Santa Fé de Veragua; Santiago de Veragua; Minerál de Veragua; Calovévora; Cordillera de Tolé; Cascajal, Coclé; Panamá).

*Trogon clathratus* SALVIN, Proc. Zool. Soc. Lond., 1866, 75 (Santa Fé de Veragua, Panamá; coll. Salvin and Godman); 1867, 151 (Santa Fé, Santiago, and Cordillera de Tolé, Veragua; descr. adult female); 1870, 202, (Calovévora, Veragua); Ibis, 1874, 329 (Minerál de Veragua, Panamá).—(?)FRANTZIUS, Journ. für Orn., 1869, 313 (Costa Rica).—GOULD, Mon. Trog., ed. 2, 1875, pl. 28 and text.—ZELEDÓN, Proc. U. S. Nat. Mus., viii, 1885, 109 (Costa Rica); Anal. Mus. Nac. Costa Rica, i, 1887, 120 (Costa Rica).—GRANT, Cat. Birds Brit. Mus., xvii, 1892, 476 (Angostura, Costa Rica; Calovévora, Cordillera de Tolé, and Santa Fé de Veragua, Panamá).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1896, 504.—CARRIKER, Ann. Carnegie Mus., vi, 1910, 562 (Costa Rica; crit.).

[*Trogon*] *clathratus* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 104.—SHARPE, Hand-list, ii, 1900, 149.

*T[rogon] clathratus* RIDGWAY, Condor, vii, 1905, 156, in text (Bonilla, e. Costa Rica).

[*Trogon*] *calthratus* GRAY, Hand-list, i, 1869, 81, no. 952.

#### Genus TROGON Brisson.

*Trogon* BRISSON, Orn., i, 1760, 42; iv, 1760, 164, pl. 16, fig. 1. (Type, as fixed by Stone, Auk, xxiv, 1907, 192,<sup>b</sup> *Trogon viridis* Linnæus=*T. strigilatus* Linnæus.)

*Aganus* <sup>c</sup> CABANIS and HEINE, Mus. Hein., iv, Feb., 1863, 184. (Type, by original designation, *Trogon viridis* Linnæus.<sup>d</sup>)

Rather large Trogons, most like *Curucujus* in structure but differing in smaller size, more strongly graduated tail, with rectrices more truncated at tip, much white on lateral rectrices, and under parts yellow or (in one species only) reddish orange.

<sup>a</sup> Three specimens.

| Locality.                              | Wing. | Tail. | Culmen. | Tarsus. | Inner anterior toe. |
|----------------------------------------|-------|-------|---------|---------|---------------------|
| MALES.                                 |       |       |         |         |                     |
| Three adult males from Costa Rica..... | 158.2 | 153.8 | 20.8    | 15.3    | 16.3                |
| Six adult males from Panamá.....       | 159.4 | 153.4 | 20.8    | 15      | 15.1                |

<sup>b</sup> "Type remains the same," i. e., as given in the American Ornithologists' Union's "Check List of North American Birds," second and revised edition (1895).

<sup>c</sup> "Von *ἀγαπός* (freundlich, angenehm)." (Cabanis and Heine.)

<sup>d</sup> Not *Aganus braccatus* Cabanis and Heine, as given in Cat. Birds Brit. Mus. (xvii, 440), since the authors expressly say that the most typical species ("deren typischer Arten") is *T. viridis*.

To what group the generic name *Harpaleus* Cabanis and Heine (Mus. Hein., iv, 1863, 185, footnote) was intended to apply can not be determined, no species being mentioned nor character given. In other words, the name is a *nomen nudum*.



Bill strong, as deep as broad at nostrils, the culmen strongly curved, sometimes distinctly ridged, sometimes rounded; gonyes shorter than mandibular rami, more or less convex, ascending terminally; anterior half of mandibular tomia strongly but irregularly serrate, the maxillary rami less strongly so; tip of mandible produced into a distinct ascending point. Nostril rounded, nonoperculate, mostly concealed by strong, antrorse, decurved bristles. Feathering of head normal; feathers of chin and malar apex antrorse, bristle-like, the former strongly recurved; seventh, sixth, or seventh and sixth primaries longest, the tenth (outermost) less than half as long as the longest; tail equal to or slightly longer than wing, graduated for more than one-third its length, the middle rectrices truncate, the lateral ones subtruncate, at tip. Tarsus decidedly shorter than longest anterior toe, feathered for upper half or more; anterior toes united for basal and part of second phalanx.

*Coloration*.—Adult males with upper parts (except wings and, sometimes, head), metallic green or blue, the middle rectrices tipped with black; wings black or blackish slate; chest slate-blackish or glossed with metallic bluish green, blue, or violet, the remaining under parts orange-yellow or (in *T. bairdii*) reddish orange or orange-red; lateral rectrices extensively white terminally and on outer web or very broadly tipped with white. Adult females with head, neck, chest, and upper parts plain slate color, the wing-coverts sometimes narrowly barred with white.

*Range*.—Western Mexico to Peru and eastern Brazil. (Five species.)

KEY TO THE SPECIES AND SUBSPECIES OF TROGON.

- a. Back, scapulars, rump, upper tail-coverts, and middle rectrices brightly metallic green or blue. (*Adult males*.)
  - b. Pileum and chest glossed, more or less, with metallic blue or violet.
    - c. Posterior under parts reddish orange or orange-red. (Southwestern Costa Rica and western Panamá.).....**Trogon bairdii**, adult male (p. 752).
    - cc. Posterior under parts orange-yellow. (*Trogon strigilatus*.)
      - d. Lateral rectrices less extensively white (the basal black on outermost pair extending much beyond the under tail-coverts. (Caribbean slope of Colombia to Cayenne, upper Amazons, and southeastern Brazil.)  
**Trogon strigilatus strigilatus** (and other South American subspecies), adult male (extralimital).<sup>a</sup>

<sup>a</sup> [*Trogon*] *strigilatus* Linnaeus, Syst. Nat., ed. 12, i, 1766, 167, no. 1 (=adult female; based on *Trogon cayanensis cinereus* Brisson, Orn., iv, 165, pl. 16, fig. 1).—*Trogon strigilatus* Stephens, Shaw's Gen. Zool., ix, 1815, 10.—[*Trogon*] *viridis* Linnaeus, Syst. Nat., ed. 12, i, 1766, 167, no. 3 (=adult male; based on *Trogon cayanensis viridis* Brisson, Orn., iv, 168, pl. 17, fig. 1).—*Trogon viridis* Stephens, Shaw's Gen. Zool., ix, 1815, 11, pl. 4; Gould, Mon. Trog., ed. 2, 1869, pl. 21 and text; Grant, Cat. Birds Brit. Mus., xvii, 1892, 458.—[*Alganus*] *viridis* Cabanis and Heine, Mus. Hein., iv, Feb., 1863, 196.—*Trogon leverianus* Shaw, Mus. Lever., 1792, 175, with plate (Cayenne; coll. Leverian Mus.).—[*Trogon*] *albiventer* Cuvier, Règne Anim., i, 1829, 459 (based on Levaillant, Couroucous, pl. 5).—*Trogon melanopterus* Swainson,

*dd.* Lateral rectrices more extensively white (the basal black on outermost pair restricted to a small area entirely concealed by under tail-coverts). (Panamá to western Ecuador.)

**Trogon strigilatus chionurus**, adult male (p. 754).

*bb.* Pileum and chest "dead" slate-black or slate color, without trace of metallic gloss (except, sometimes, very faintly, on occiput and hindneck).

*c.* Outermost pair of rectrices with much less than terminal third white. (*Trogon melanocephalus*.)

*d.* Head, neck, and chest slate-black to blackish slate. (Eastern Mexico to northeastern Costa Rica.)

**Trogon melanocephalus melanocephalus**, adult male (p. 756).

*dd.* Head, neck, and chest slate color to slate-gray. (Pacific coast district of Costa Rica and Nicaragua.)

**Trogon melanocephalus illætabilis**, adult male (p. 759).

*cc.* Outermost pair of rectrices with terminal half, or more, white. (Western Mexico.)

**Trogon citreolus**, adult male (p. 759).

*aa.* Back, scapulars, rump, upper tail-coverts, and middle rectrices blackish slate to slate-gray, like head, neck, and chest. (*Adult females*.)

*b.* Wing-coverts and secondaries narrowly barred with white or pale gray; lateral rectrices barred with white.

*c.* Posterior under parts reddish orange or orange-red.

**Trogon bairdii**, adult female (p. 753).

*cc.* Posterior under parts orange-yellow. (*Trogon strigilatus*.)

*d.* Lateral rectrices with white much less extended.

**Trogon strigilatus strigilatus**, adult female (extralimital).

*dd.* Lateral rectrices with much more white.

**Trogon strigilatus chionurus**, adult female (p. 755).

*bb.* Wing-coverts and secondaries plain blackish slate or slate color; lateral rectrices not distinctly (if at all) barred with white.

*c.* White tip to lateral rectrices much shorter, with anterior outline more directly transverse. (*Trogon melanocephalus*.)

*d.* Head, neck, and chest darker (slate-blackish).

**Trogon melanocephalus melanocephalus**, adult female (p. 757).

*dd.* Head, neck, and chest more grayish (slate color to slate-gray).

**Trogon melanocephalus illætabilis**, adult female (p. 759).

*cc.* White tip to lateral rectrices much longer, with lateral outlines strongly oblique.

**Trogon citreolus**, adult female (p. 760).

### TROGON BAIRDII Lawrence.

#### BAIRD'S TROGON.

Similar to *T. strigilatus chionurus*, but posterior under parts bright orange or orange-red instead of orange-yellow.

*Adult male*.—Pileum and hindneck black, usually more or less glossed with violet-blue; back, scapulars, anterior lesser wing-coverts,

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Anim. in Menag., pt. iii, Jan. 1, 1838, 332 (Brazil; coll. W. Swainson); Gould, Mon. Trog., ed. 1, 1838, pls. 10, 11, and text.—*A[ganus] venustus* Cabanis and Heine, Mus. Hein., iv, Feb., 1863, 194 (Colombia; coll. Heine Mus.).—*T[rogon] cyanurus* Finsch, Proc. Zool. Soc. Lond., Nov., 1870, 559, in text (Cayenne; coll. Bremen Mus.; ex Hartlaub, manuscript).

Like many other of the South American Trogons, this species unquestionably requires subdivision. The specimens from southeastern Brazil, for example, are very different from those from Cayenne, etc.

and upper rump bright metallic green or bluish green, usually intermixed with violet-blue, passing into rich violet-blue or bluish violet on upper margin of back and on lower rump and upper tail-coverts; middle rectrices rather dark metallic bluish green to violet-blue, abruptly tipped with black, the inner web of second and third rectrices (from middle) wholly black; lateral rectrices extensively white terminally, the white on third (from outside) occupying about terminal third to terminal half (the white area usually smaller on inner than on outer web), the outermost rectrix with whole of the exposed portion white, the black being confined to a small area, concealed by under tail-coverts; wings (except anterior lesser coverts) uniform black, the longer primaries edged with white basally; sides of head, chin, throat, chest, and upper breast dull black or sooty black, the lower chest and upper breast usually glossed, more or less, with violet-blue, especially laterally; rest of under parts bright pure reddish orange or orange-red (flame scarlet to between flame scarlet and saturn red), the tibial and tarsal feathers sooty black; bill (in dried skins) pale grayish yellow or glaucous-whitish, sometimes darker (grayish) on mandible and lower basal portion of maxilla; feet horn color (in dried skins); length (skins), 263–298 (282); wing, 142–153 (146.5); tail, 147–172.5 (155.9); culmen, 21.5–25 (23.4); tarsus, 12.5–15 (14.2); inner anterior toe, 13–16 (14.4).<sup>a</sup>

*Adult female*.—Above plain slate color or dark slate-gray, the four middle rectrices darker (blackish slate or sooty slate), narrowly tipped with black; wings black, the wing-coverts and secondaries very narrowly barred with white (these narrow white transverse lines many times narrower than the black interspaces), the longer primaries edged with white basally and, usually, specked or dotted with white distally or subterminally; lateral rectrices black, tipped with white (the white tip from about 2–9 mm. wide), the remaining portion narrowly barred with white (white bars several times narrower than the black interspaces) for distal portion and on greater part of outer web; lores and orbital region blackish; sides of head and neck, chin, throat, chest, whole breast, sides, and flanks uniform slate-gray or grayish slate, gradually darkening into the color of pileum, etc., somewhat paler along posterior margin, where sometimes faintly barred with still paler grayish and tipped with orange-pinkish; abdomen, anal region, and under tail-coverts reddish orange (clear orange-chrome to saturn red or light flame scarlet), the flanks more or less strongly tinged or intermixed with the same, the feathers of tibia and tarsus dark sooty slate; maxilla black, with lower basal portion, together with mandible, grayish (in dried skins); feet as in

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<sup>a</sup> Eighteen specimens.



adult male; length (skins), 258–304 (286); wing, 143–153.5 (146); tail, 148–170 (157.8); culmen, 21–23 (22); tarsus, 13.5–15.5 (14.2); inner anterior toe, 13.5–15 (14.2).<sup>a</sup>

*Young male (nestling).*—Similar to the adult female, but abdomen, sides, and flanks grayish sooty passing into pale fulvous or buffy on anal region, the under tail-coverts dull white and pale buffy with basal portion dark sooty.

Southwestern Costa Rica (San Mateo; Las Trojas; Pigres; Pozo Azul de Pirris; Pozo del Rio Grande; El Pozo de Térraba; Boruca; El General; Palmár) and western Panamá (Divala; Bugaba; Bibaláz; Veragua; Chiriquí).

*Trogon bairdii* LAWRENCE, Ann. Lyc. Nat. Hist. N. Y., ix, 1870 (extras issued April, 1868), 119, 120 (San Mateo, w. Costa Rica; coll. U. S. Nat. Mus.).—FRANTZIUS, Journ. für Orn., 1869, 313 (Costa Rica).—ZELEDÓN, Proc. U. S. Nat. Mus., viii, 1885, 109 (Costa Rica); Anal. Mus. Nac. Costa Rica, i, 1887, 120 (Pozo Azul de Pirris and Las Trojas, s. w. Costa Rica).—CHERRIE, Expl. Zool. Merid. C. R., 1893, 47 (Palmár and Boruca, s. w. Costa Rica).—RIDGWAY, Condor, vii, 1905, 155, in text (near Pigres, w. Costa Rica).

*Trogon bairdi* SALVIN, Ibis, 1869, 316; Proc. Zool. Soc. Lond., 1870, 202 (Bugaba, Panamá; descr. adult female).—GOULD, Mon. Trog., ed. 2, 1875, pl. 23 and text.—GRANT, Cat. Birds Brit. Mus., xvii, 1892, 461 (Bugaba and Bibaláz, Panamá).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1896, 496.—BANGS, Auk, xxiv, 1907, 294 (Boruca and Pozo del Rio Grande, s. w. Costa Rica).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 560 (s. w. Costa Rica; habits).

[*Trogon*] *bairdi* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 104.—SHARPE, Hand-list, ii, 1900, 148.

*Trogon clathratus* (not of Salvin) LAWRENCE, Ann. Lyc. N. Y., ix, 1868, 119 (San Mateo, Costa Rica; descr. supposed female).—(?) FRANTZIUS, Journ. für Orn., 1869, 313 (Costa Rica).

### TROGON STRIGILATUS CHIONURUS (Sclater and Salvin).

#### WHITE-TAILED TROGON.

*Adult male.*—Head, neck, and upper chest black glossed with violet, the lower chest and sides of breast dark metallic bluish violet or violet-blue; back, scapulars, and upper rump brilliant metallic green, passing into violet-blue on upper margin of back, lower rump, and upper tail-

<sup>a</sup> Thirteen specimens.

| Locality.                                             | Wing. | Tail. | Culmen. | Tarsus. | Inner anterior toe. |
|-------------------------------------------------------|-------|-------|---------|---------|---------------------|
| MALES.                                                |       |       |         |         |                     |
| Ten adult males from Costa Rica.....                  | 147.1 | 157.6 | 23.5    | 14.3    | 14.4                |
| Eight adult males from western Panamá (Chiriquí)..... | 145.7 | 153.8 | 23.2    | 14.1    | 14.5                |
| FEMALES.                                              |       |       |         |         |                     |
| Nine adult females from Costa Rica.....               | 145.7 | 155.5 | 22.1    | 14.2    | 14.2                |
| Four adult females from western Panamá.....           | 146.6 | 163.1 | 21.9    | 14.4    | 14.1                |

coverts; middle pair of rectrices metallic bluish green or greenish blue, abruptly tipped with black, the next two pairs similar on outer web, but inner web wholly black; fourth rectrix (from middle) black, with about terminal half of outer web white, the inner web with much less white, with base of the area forming an acute angle next to shaft; fifth rectrix with the white occupying approximately terminal two-thirds of outer web and terminal half of inner web; outermost rectrix with only the extreme base of outer web and basal third, or less, of inner web black, sometimes with the black reduced to a small spot; wings black, the primaries (except shorter proximal ones) edged basally with white; median portion of breast, abdomen, flanks, and under tail-coverts rich orange-yellow (cadmium yellow); sides dark slaty or blackish slate; thighs slate-black; bill (in dried skins) light grayish yellow; feet dusky or horn color (in dried skins); length (skins), 250–274 (265); wing, 129–144 (136); tail, 137–151 (145.2); culmen, 21–23 (22); tarsus, 12–14.5 (13.3); inner anterior toe, 13–14.5 (13.9).<sup>a</sup>

*Adult female*.—Above uniform blackish slate, the rectrices without black tip; wings rather darker (slate-black), the coverts and secondaries very narrowly barred with white, the primaries edged with white basally and with small spots of white along edge for terminal half or more; three lateral rectrices (on each side) with much less white than in adult male, this broken (except for broad terminal portion) with broad bars confluent with the slate-black basal area; sides of head and neck, chin, throat, chest, and breast plain blackish slate (very slightly less blackish than upper parts), slightly paler (more grayish slate) posteriorly and on sides and outer portion of flanks; rest of underparts orange-yellow (less intense than in adult male), the thighs blackish slate; maxilla mostly blackish or dusky horn color, the mandible paler (dull grayish yellowish), at least terminally; feet as in adult male; length (skins), 267–270 (268); wing, 136–140 (137.5); tail, 144–150.5 (146.1); culmen, 19–21 (20.1); tarsus, 13–15 (13.5); inner anterior toe, 12.5–13.5 (13).<sup>b</sup>

*Immature male*.—Similar to the adult male, but lateral rectrices as in adult female (the white more extended, however, and the broad black bars not reaching to shaft on inner web), wing-coverts and

<sup>a</sup> Fifteen specimens.

<sup>b</sup> Four specimens.

| Locality.                                            | Wing. | Tail. | Culmen. | Tarsus. | Inner anterior toe. |
|------------------------------------------------------|-------|-------|---------|---------|---------------------|
| MALES.                                               |       |       |         |         |                     |
| Ten adult males from Panamá.....                     | 136.3 | 144.9 | 21.7    | 13.1    | 13.7                |
| Four adult males from Colombia.....                  | 134.7 | 144.2 | 22.2    | 13.6    | 14.1                |
| One adult male from western Ecuador (Guayaquil)..... | 139   | 151   | 23.5    | 14      | 14.5                |

proximal secondaries very narrowly barred with light gray, distal secondaries with small spots of white along edge of outer web, and anterior underparts (in younger specimens) intermixed with dull blackish slate.

Eastern Panamá (Panamá; Lion Hill; Cascajal, Coclé), north-western Colombia (Rio Truando; valley of Rio Magdalena; Patúria; Remédios, Medellín, and Nechi, Antioquía; Carmen; near Jiménez; 20 miles from Honda, Tolima, 2,000 feet), and western Ecuador (Guayaquil; Balzár Mountains; Cachaví, 500 feet; Foreste del Rio Peripa).

*Trogon melanopterus* (not of Swainson) CASSIN, Proc. Ac. Nat. Sci. Phila., 1860, 136 (Rio Truando, n. w. Colombia).

*Trogon viridis* (not of Linnæus) LAWRENCE, Ann. Lyc. N. Y., vii, 1862, 290 (Lion Hill, Panamá).—SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1864, 364 (Lion Hill).

*Trogon chionurus* SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1870, 843 (Lion Hill, Panamá; coll. Salvin and Godman); 1871, 374 (crit.); 1879, 535, 549 (Remédios and Nechi, Antioquía, Colombia).—WYATT, Ibis, 1871, 130 (Magdalena Valley, Colombia), 374 (Patúria, Colombia).—BERLEPSCH, Journ. für Orn., 1884, 318 (Patúria).—GRANT, Cat. Birds Brit. Mus., xvii, 1892, 460 (Verágua, Panamá; Remédios and Medellín, Colombia; Balzár Mts., w. Ecuador).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1896, 495.—HARTERT, Novit. Zool., v, 1898, 499 (Cachaví, 500 ft., n. w. Ecuador).—SALVADORI and FESTA, Boll. Mus. Zool., etc., Torino, xv, 1900, 17 (Foreste del Rio Peripa, w. Ecuador).—BANGS, Proc. New Engl. Zool. Club, ii, 1900, 19 (Lion Hill).

[*Trogon*] *chionurus* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 104.—SHARPE, Hand-list, ii, 1900, 148.

*Trogon eximius* LAWRENCE, Ann. Lyc. Nat. Hist. N. Y., x, 1874 (pub. March, 1871), 11, 13 (Panamá; coll. G. N. Lawrence).

### TROGON MELANOCEPHALUS MELANOCEPHALUS Gould.

#### BLACK-HEADED TROGON.

*Adult male*.—Head, neck, and chest uniform black or slate-black, the occiput and hindneck sometimes faintly glossed with metallic bluish; back, scapulars, anterior lesser wing-coverts, and upper rump bright metallic bluish green to golden green, usually more bluish next to black of hindneck and sometimes intermixed with violet-blue; lower rump and upper tail-coverts rich metallic blue, violet-blue, or bluish violet; four middle rectrices metallic bronze-green to bluish green (rarely blue or violet-blue), abruptly tipped with black, the inner web of second and third rectrices (from middle) wholly black; three lateral pairs of rectrices black, broadly tipped with white (this about 15–30 mm. wide); wings (except anterior portion of lesser covert area) slate-black, the longer primaries edged basally with white; sides and flanks blackish slate or sooty slate, the latter more or less tinged or intermixed with orange-yellow; rest of underparts rich orange-yellow (cadmium or deep chrome), fading into yellowish



white anteriorly, where forming a more or less well-defined band against blackish of chest, the feathers of tibia and tarsus sooty blackish; bill (in dried skins) pale grayish yellow or yellowish gray; iris brown; naked eyelids sky blue or light azure blue; feet dusky horn color (in dried skins); length (skins), 256-303 (272); wing, 130-146.5 (137.9); tail, 136-165 (148.2); culmen, 18-21.5 (19.7); tarsus, 13-15 (13.9); inner anterior toe, 13-15 (14.1).<sup>a</sup>

*Adult female*.—Similar to the adult male but metallic coloring of upper parts replaced by slate color or blackish slate; maxilla black, except lower basal portion; length (skins), 250-285 (267); wing, 133-141.5 (136.4); tail, 138-155 (147); culmen, 17-21.5 (19.1); tarsus, 13-14.5 (13.9); inner anterior toe, 13-15 (13.7).<sup>b</sup>

*Immature male*.—Similar to the adult male but middle rectrices mostly dull black (the metallic coloring mostly confined to basal two-thirds of outer web of middle pair and basal outer edge of next two), lateral rectrices narrower at tip and with two or three white spots or bars on subterminal portion of outer web, and outer webs of secondaries and greater wing-coverts spotted and edged with white.

*Immature female*.—Similar to the adult female but middle rectrices without distinct black tip, lateral rectrices narrower at tip and with outer web more or less spotted or barred with white, and secondaries edged with white.

Eastern Mexico, from States of southern Tamaulipas (Tampico; Alta Mira), Vera Cruz (Catemán; Orizaba; Jalapa; Playa Vicente; Uvero; Achotál; Misantla; Laguna Verde; Tlalcotalpám; Minatitlán; Coatzacoalcos; Otatitlán; Motzorongo; Rivera; Santo Domingo; Pasa Nueva), Puebla (Rinconada), Mexico ("City of Mexico"), eastern Oaxaca (Túxtepec), Tabasco (Teapa), Chiapas (Palenque), Cam-

<sup>a</sup> Twenty-nine specimens.

<sup>b</sup> Eighteen specimens.

| Locality.                                                                                                           | Wing. | Tail. | Culmen. | Tarsus. | Inner anterior toe. |
|---------------------------------------------------------------------------------------------------------------------|-------|-------|---------|---------|---------------------|
| MALES.                                                                                                              |       |       |         |         |                     |
| Nine adult males from Tamaulipas (2) and Vera Cruz (7).....                                                         | 140.5 | 155.7 | 20.1    | 14.2    | 14.4                |
| Ten adult males from Yucatán.....                                                                                   | 136.7 | 147.5 | 19.3    | 13.8    | 14.1                |
| Ten adult males from Chiapas (1), Guatemala (2), British Honduras (1), Honduras (5), and eastern Nicaragua (1)..... | 136.8 | 144.2 | 19.6    | 13.6    | 13.8                |
| Seven adult males ( <i>T. m. illætabilis</i> ) from western Nicaragua...                                            | 141.1 | 148.9 | 21      | 14.4    | 14.4                |
| Ten adult males ( <i>T. m. illætabilis</i> ) from western Costa Rica...                                             | 145.6 | 153.9 | 21.3    | 14.5    | 14.6                |
| FEMALES.                                                                                                            |       |       |         |         |                     |
| Eight adult females from Mexico (1), Vera Cruz (5), Oaxaca (1), and Tabasco (1).....                                | 136.4 | 148.5 | 19.3    | 13.9    | 14.1                |
| Nine adult females from Yucatán.....                                                                                | 136.9 | 146.7 | 19.1    | 13.8    | 13.5                |
| One adult female from British Honduras.....                                                                         | 133   | 138   | 17      | -----   | -----               |
| Ten adult females ( <i>T. m. illætabilis</i> ) from western Costa Rica...                                           | 144.3 | 148.8 | 20.5    | 14.2    | 14.6                |

peche (Apazote), and Yucatán (Mérida; Silám; La Vega; Temáx; Izamál; Calotmúl; Cuxtún; Buctzotz; Peto; Meco; San Felipe; Chichen-Itza; Yak-Zonat; Chem-Zonat; Meco Island), southward through British Honduras (Belize; Corosál; Orange Walk; San Antonio; Cayo; San Felipe), Guatemala (Choctúm; Rio Managua; Gualán, Zacapa; Los Amates, Yzabál; Santo Tomas), Salvadór (La Unión; Volcán de San Miguél), Honduras (Omoa; Medina; San Pedro; Chasniguas; Truxillo; Boca de Rio Román; Céiba; Taulevi; Tigre Island) and eastern Nicaragua (Greytown; Los Sábalos; La Libertád, Chontales) to northeastern Costa Rica (Rio Frio).

*Trogon melanocephala* GOULD, Mon. Trog., ed. 1, 1838, pl. 12 (Tamaulipas, Mexico; coll. J. Gould).

[*Trogon melanocephalus* GRAY, Gen. Birds, i, 1845, 70.—BONAPARTE, Consp. Av., i, 1850, 149.—RIDGWAY, Man. N. Am. Birds, 1887, 277. .

*Trogon melanocephalus* GRAY, List Fissir. Birds Brit. Mus., 1848, 42 (Mexico; Honduras).—SCLATER, Proc. Zool. Soc. Lond., 1857, 227 (Catemán, Vera Cruz); 1858, 357 (Tigre I., Honduras); 1859, 367 (Jalapa, Vera Cruz), 387 (Playa Vicente, Vera Cruz); Cat. Am. Birds, 1862, 276 (Guatemala).—GOULD, Mon. Trog., ed. 2, 1858, pl. 27 and text (Mexico; Honduras).—SCLATER and SALVIN, Ibis, 1859, 132 (Guatemala; Honduras); Proc. Zool. Soc. Lond., 1870, 837 (Medina and San Pedro, Honduras).—MOORE, Proc. Zool. Soc. Lond., 1859, 53 (Omoa, Honduras).—TAYLOR, Ibis, 1860, 117 (Tigre I. and Taulevi, Honduras).—SALVIN, Ibis, 1870, 115 (Costa Rica); 1872, 322 (Chontales, Nicaragua); 1889, 371 (Meco I., Yucatan; range); 1890, 88 (Meco I., etc.).—LAWRENCE, Ann. Lyc. N. Y., viii, 1867, 183 (Greytown, Nicaragua).—SUMICHRIST, La Naturaleza, v, 1881, 239 (Uvero, Vera Cruz).—BOUCARD, Proc. Zool. Soc. Lond., 1883, 454 (Yak-Zonat and Chem-Zonat, Yucatan).—ZELEDÓN, Proc. U. S. Nat. Mus., viii, 1885, 109 (Costa Rica); Anal. Mus. Nac. Costa Rica, i, 1887, 120.—RIDGWAY, Proc. U. S. Nat. Mus., x, 1887, 581 (Truxillo, Honduras).—GRANT, Cat. Birds Brit. Mus., xvii, 1892, 462, part (Tampico, Tamaulipas; Playa Vicente, Misantla, and Laguna Verde, Vera Cruz; Teapa, Tabasco; Meco I., Buctzotz, Mérida, and Peto, Yucatan; etc.).—RICHMOND, Proc. U. S. Nat. Mus., xvi, 1893, 515 (Rio Escondido, Nicaragua; habits); xviii, 1896, 629 (Alta Mira, Tamaulipas).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1896, 498, part.—LANTZ, Trans. Kansas Ac. Sci. for 1896-97 (1899), 220 (Rinconada, Puebla; Santo Tomas, Guatemala).—BANGS, Bull. Mus. Comp. Zool., xxxix, 1903, 144 (Céiba, Honduras).—COLE, Bull. Mus. Comp. Zool., i, 1906, 129 (Chichen-Itza, Yucatan; crit.).—DEARBORN, Pub. 125, Field Mus. N. H., 1907, 88 (Los Amates and Gualán, Guatemala).

[*Trogon melanocephalus* GRAY, Hand-list, i, 1869, 82, no. 958.—SUMICHRIST, Mem. Bost. Soc. N. H., i, 1869, 560 (hot region Vera Cruz).—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 104.—SHARPE, Hand-list, ii, 1900, 148.

*Trogon melanocephalus melanocephalus* BANGS, Proc. Biol. Soc. Wash., xxii, March 10, 1909, 31, in text (crit.).

[*Trogonurus melanocephalus* BONAPARTE, Consp. Voluc. Zygod., 1854, 14.

*A[ganus] melanocephalus* CABANIS and HEINE, Mus. Hein., iv, March, 1863, 197 (Mexico).

[*Aganus melanocephalus* HEINE and REICHENOW, Nom. Mus. Hein. Orn., 1890, 209 (México).

## TROGON MELANOCEPHALUS ILLÆTABILIS Bangs.

## SLATY-HEADED TROGON.

Similar to *T. m. melanocephalus*, but head, neck, and chest more slaty, the chest often slate-gray in adult female; slightly larger.

*Adult male*.—Length (skins), 260–288 (268); wing, 132.5–148.5 (143.8); tail, 143.5–158.5 (151.9); culmen, 19.5–23.5 (21.2); tarsus, 13.5–15 (14.5); inner anterior toe, 14–15 (14.5).<sup>a</sup>

*Adult female*.—Length (skins), 255–267 (259); wing, 140–150.5 (144.3); tail, 142.5–156 (148.8); culmen, 19.5–22 (20.5); tarsus, 13.5–15 (14.2); middle toe, 14–15.5 (14.6).<sup>b</sup>

Western Costa Rica (Bolsón; Bebedero; Barranca de Punta Arenas; Tenório; Volcán de Miravalles) and western Nicaragua (Sucuyá; Realejo; Manágua; Omotepe; San Gerónimo, Chinandega; Grenada).

*Trogon melanocephalus* (not of Gould) NUTTING, Proc. U. S. Nat. Mus., v, 1882, 400 (La Palma de Nicoya, w. Costa Rica; habits); vi, 1883, 376, 387, 395 (San Juan del Sur, Sucuyá, and Omotepe, Nicaragua).—GRANT, Cat. Birds Brit. Mus., xvii, 1892, 462, part (Virgin Bay and Volcán de Chinandega, w. Nicaragua; Costa Rica?).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1896, 498, part (San Juan del Sur, Sucuyá, Omotepe, Virgin Bay, and Volcán de Chinandega, w. Nicaragua; La Palma de Nicoya, w. Costa Rica).—UNDERWOOD, Ibis, 1896, 444 (Volcán de Miravalles and Bagaces, n. w. Costa Rica).—(?)ALFARO, Paginas Ilustradas, i, 1904, 530, 531 (Costa Rica; nesting habits; fig. of nest).—BANGS, Auk, xxiv, 1907, 294 (Barranca de Punta Arenas, w. Costa Rica).

(?)*T[rogon] melanocephalus* LAWRENCE, Ann. Lyc. N. Y., ix, 1868, 120, in text (Costa Rica).

*Trogon melanocephalus illaetabilis* BANGS, Proc. Biol. Soc. Wash., xxii, March 10, 1909, 30 (Bolsón, w. Costa Rica; coll. E. A. and O. Bangs).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 560 (Nicoya peninsula and s. Guanacaste, w. Costa Rica).

## TROGON CITREOLUS Gould.

## CITREOLINE TROGON.

*Adult male*.—Pileum, hindneck, and sides of head and neck blackish slate, passing gradually into slate color on chin, throat, and chest; back and scapulars metallic golden green, passing into metallic bluish green or greenish blue (sometimes tinged with violet-blue) on rump and upper tail-coverts; the extreme upper portion of back sometimes bluish green; middle pair of rectrices metallic green or bronze-green, abruptly and rather narrowly tipped with black, the outer web of next two pairs similar but inner web wholly black; three outer pairs black basally, extensively white terminally, the white on outermost rectrix occupying about half of inner web and all but basal portion of outer web, that on the third (from outside) about terminal third of outer and fourth of inner web; wing-coverts

<sup>a</sup> Seventeen specimens.

<sup>b</sup> Ten specimens, from western Costa Rica.



and secondaries plain slate color, the anterior lesser coverts broadly tipped with metallic green or golden green; primaries blackish slate, broadly edged with white, except the shorter proximal and outermost quills; upper breast white or yellowish white, passing into yellow (deep chrome or light orange-yellow) on rest of under parts, the thighs slate color; bill pale grayish yellowish (bluish gray in life);<sup>a</sup> naked eyelids ultramarine blue or violet-blue;<sup>a</sup> iris yellow;<sup>a</sup> feet dusky horn color (bluish gray or cinereous in life);<sup>a</sup> length (skins), 255–287 (269); wing, 130.5–145.5 (137); tail, 139–158 (147.8); culmen, 18.5–21 (19.8); tarsus, 13–14.5 (13.6); inner anterior toe, 13–15 (14).<sup>b</sup>

*Adult female*.—Similar to the adult male, but back, scapulars, rump, and upper tail-coverts uniform slate color (or between slate color and slate-gray), middle rectrices dark slate color (the middle pair less dark and narrowly tipped with black, white of lateral rectrices much less extensive (that on outer web broken proximally into bars or spots, that on inner web with the proximal margin much less sharply defined, sometimes broken into irregular spotting or marbling), anterior under parts paler (slate-gray instead of slate color), yellow of other under parts averaging paler, and maxilla blackish, except for lower basal (rectal) portion; length (skins), 249–282 (264); wing, 130.5–141 (136.6); tail, 140.5–160 (148); culmen, 17–20 (18.7); tarsus, 12.5–15 (13.8); inner anterior toe, 13–15 (14).<sup>c</sup>

*Immature male*.—Similar to the adult male, but outer web of greater wing-coverts and secondaries conspicuously edged with white, metallic color of middle rectrices duller, white of breast more extended, and yellow of posterior under parts paler.

*Immature female*.—Similar to the adult female, but greater wing-coverts and secondaries conspicuously edged with white, the proximal secondaries (tertials) mottled with the same, middle rectrices lighter and more brownish slate and without black tip, and posterior under parts yellowish white.

Pacific slope of Mexico, in States of Sinaloa (Mazatlán; Presidio de Mazatlán; La Palma; Los Coyotes; Escuinapa), Michoacán (La Salada), Colima (Manzanillo; Culata near Manzanillo; Colima; Rio de la Armería; Sierra Madre), Guerrero (Acapulco; Rincón), Oaxaca (Tehuántepec; Tapántepec; Tapaná; Huilótepec; Santa Efigénia; Chimalapa; Chihuitán; Tequistlán; Ianhuítlán; Ventosa; Cacoprieto), and Chiapas (Tonalá), and Territory of Tepic (San Blas; Santiago; Rancho El Colomo, Compostella).

*Trogon citreolus* GOULD, Proc. Zool. Soc. Lond., 1835, 30 (locality unknown; coll. J. Gould); Mon. Trog., ed. 1, 1838, pl. 13 and text; ed. 2, 1875, pl. 26 and text.—SCLATER and SALVIN, Ibis, 1859, 132 ("Yucatan;" error).—FINSCH, Abh. Nat. Mus. Bremen, 1870, 327 (Mazatlán, Sinaloa).—LAWRENCE, Mem.

<sup>a</sup> Sumichrast.

<sup>b</sup> Ten specimens.

<sup>c</sup> Nine specimens.

- Bost. Soc. N. H., ii, 1874, 290 (Mazatlán; crit.); Bull. U. S. Nat. Mus., no. 4, 1876, 31 (Chihuitán, Ventosa, Tapana, and Santa Efigénia, Oaxaca).—SUMICHRAST, La Naturaleza, v, 1881, 239.—FERRARI-PEREZ, Proc. U. S. Nat. Mus., ix, 1886, 162 (Oaxaca).—GRANT, Cat. Birds Brit. Mus., xvii, 1892, 461 (Mazatlán); Santiago and San Blas, Tepic; Culata and Colima, Colima; Acapulco and Rincón, Guerrero; Tehuán-tepec and Chimalapa, Oaxaca; Tonalá, Chiapas).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1896, 497.—MILLER (W. De W.), Bull. Am. Mus. N. H., xxi, 1905, 350 (Escuinapa, etc., s. Sinaloa; habits; crit.).—BAILEY (H. H.), Auk, xxiii, 1906, 388 (San Blas, Tepic).
- T[rogon] citreolus* GRAY, Gen. Birds, i, 1845, 69.—BONAPARTE, Consp. Av., i, 1850, 149.—RIDGWAY, Man. N. Am. Birds, 1887, 277.
- [Trogon] citreolus* GRAY, Hand-list, i, 1869, 82, no. 967.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 104.—SHARPE, Hand-list, ii, 1900, 148.
- A[ganus] citreolus* CABANIS and HEINE, Mus. Hein., iv, 1863, 197, footnote ("Guatemala;" Mexico).
- [Aganus] citreolus* HEINE and REICHENOW, Nom. Mus. Hein. Orn., 1890, 209 (Mazatlán).
- (?) *Trogon capistratum* <sup>a</sup> LESSON, Rev. Zool., 1842, 136 (Realejo, Nicaragua; error?).
- (?) *T[rogon] capistratus* <sup>a</sup> GRAY, Gen. Birds, iii, 1849, App., p. 4.—BONAPARTE, Compt. Rend., xlii, 1856,—.
- (?) *[Trogonurus] capistratus* <sup>a</sup> BONAPARTE, Consp. Voluc. Zygod., 1854, 14.

#### Genus TROGONURUS Bonaparte.

- Trogonurus* BONAPARTE, Ann. Sci. Nat. (Zool.), 4 sér., i, 1854, 130 (*nomen nudum*); Ateneo Italiano, no. 8, May, 1854, — (Consp. Voluc. Zygod., 1854, 14). Type, as fixed by Gray, 1855, *Trogon collaris* Vieillot.)
- Pothinus* <sup>b</sup> CABANIS and HEINE, Mus. Hein., iv, Feb., 1863, 180. (Type, *Trogon atricollis* Vieillot.)
- Hapalophorus* <sup>c</sup> CABANIS and HEINE, Mus. Hein., iv, Feb., 1863, 199. (Type, *Trogon surucura* Vieillot.)

Rather small and delicately-built Trogons with serrated tomlia, relatively small and weak bill, lateral rectrices always broadly tipped (usually also barred) with white, the auricular feathers not elongated, slender, nor filamentous, and the adult female without metallic colors.

Bill relatively small (not more than half as long as head), the culmen rather strongly arched, usually distinctly ridged, not depressed basally; tomlia distinctly serrate; gonys about half as long as mandibular rami or a little less, distinctly convex, strongly ascending terminally, the tip of mandible forming a distinct ascending point; interramal space about as broad basally as long. Nostril roundish, nonoperculate, mostly hidden by distinct antrorse, decurved bristles; feathers of chin and malar apex also antrorse and bristle-like, the former strongly recurved. Seventh, or seventh and sixth, primaries

<sup>a</sup> Possibly *T. melanocephalus illatabilis* Bangs, in which case the name of this bird would be *Trogon melanocephalus capistratus* (Lesson).

<sup>b</sup> "Von ποθεωδς (erwünscht, ersieht)." (Cabanis and Heine.)

<sup>c</sup> "Von ἀπαλοφόρος (weiche Kleider, zartes Gefieder tragend)." (Cabanis and Heine.)

longest, the tenth (outermost) very variable, sometimes not more than half as long as ninth, sometimes more than half as long as seventh (longest); tail decidedly (sometimes much) longer than wing, all the rectrices (except, sometimes, outermost pair) truncate or subtruncate at tip, the outermost pair more or less strongly bowed basally. Tarsus about as long as longest anterior toe, naked for about lower half; inner anterior toe united to outer toe for whole of its first and half or more of its second phalanx.

*Coloration*.—Adult males with chest and upper parts (except wings) metallic green, bronze, or blue (head sometimes black), the wing-coverts and secondaries narrowly barred or vermiculated with white and blackish, the middle rectrices broadly tipped with black; under parts (posterior to chest) bright red, orange, or orange-yellow, this usually separated from metallic green, bronze, or blue of chest by a band of white; adult females with chest and upper parts brown or slate color.

*Range*.—Rio Grande Valley and southern Arizona to eastern Peru, Bolivia, Paraguay, Uruguay, Cayenne, and Trinidad. (About fifteen species.)

#### KEY TO THE SPECIES AND SUBSPECIES OF *TROGONURUS*.

- a. Back, chest, etc., bright metallic green, golden green, or golden bronze. (*Adult males*.)
  - b. Lateral rectrices uniform black, except the broad terminal area of white; outer web of primaries not edged with white. (Highlands of Mexico and Guatemala.)  
***Trogonurus mexicanus*, adult male (p. 765).**
  - bb. Lateral rectrices barred or vermiculated with white; outer web of primaries (except outermost) edged with white.
  - c. Under parts, posterior to chest, red or orange.
  - d. Lateral rectrices (three pairs) very broadly tipped with white. (Under parts red, rarely orange.)
  - e. Lateral rectrices white, finely vermiculated or narrowly barred with black (except the very broad terminal immaculate area); forehead (sometimes crown also) black.
  - f. Lateral rectrices vermiculated; middle rectrices golden or coppery; tail shorter (152.5–171). (*Trogonurus ambiguus*.)
    - g. Above more golden or bronzy, the middle rectrices frequently coppery bronze; tail averaging longer (165.6 mm.). (Highlands of Mexico to southern Arizona and Rio Grande Valley in Texas.)  
***Trogonurus ambiguus ambiguus*, adult male (p. 768).**
    - gg. Above more greenish, the middle rectrices bronze-green to greenish bronze (never coppery); tail averaging shorter (155.8 mm.). (Tres Marias Islands, western Mexico.)  
***Trogonurus ambiguus goldmani*, adult male (p. 772).**
    - ff. Lateral rectrices narrowly and regularly barred; middle rectrices green or golden green; tail longer (161.5–180.5 mm.). (Pacific slope, from Guatemala to Costa Rica.)  
***Trogonurus elegans*, adult male (p. 773).**



ee. Lateral rectrices (except the broad white tip) black, regularly barred with white; forehead (except extreme anterior portion) and crown metallic green.

f. Lateral rectrices broadly barred with white; wing-coverts and secondaries more coarsely vermiculated or barred. (Colombia to Venezuela, Ecuador, eastern Peru, etc.)

**Trogonurus collaris**, adult male (extralimital).<sup>a</sup>

ff. Lateral rectrices very narrowly barred with white; wing coverts and secondaries finely vermiculated. (Colombia to British Guiana, Ecuador, Bolivia, etc.)

**Trogonurus personatus**, adult male (extralimital).<sup>b</sup>

dd. Lateral rectrices narrowly tipped with white (the remaining portion, for most part, narrowly barred with white).

e. Under parts pure geranium red. (Southern Mexico to western Panamá.)

**Trogonurus puella**, adult male (p. 775).

ee. Under parts orange or orange-red. (*Trogonurus aurantiiventris*.)

f. Under parts orange (between cadmium orange and saturn red). (Mountains of western Panamá to central Costa Rica.)

**Trogonurus aurantiiventris aurantiiventris**, adult male (p. 778).

ff. Under parts orange-red (flame scarlet to salmon-pink). (Mountains of northwestern Costa Rica.)

**Trogonurus aurantiiventris underwoodi**, adult male (p. 780).

cc. Under parts yellow. (*Trogonurus curucui*.)

<sup>a</sup> *Trogon collaris* Vieillot, Nouv. Dict. d'Hist. Nat., viii, 1817, 320 ("Cayenne"); Gould, Mon. Trog., ed. 1, 1838, pl. 5 and text; Grant, Cat. Birds Brit. Mus., xvii, 1892, 448.—[*Trogonurus*] *collaris* Bonaparte, Consp. Voluc. Zygod., 1854, 14.—*Trogon castaneus* Spix, Av. Bras., i, 1824, 48, pl. 47 (=female).—*Trogon rosalba* Cuvier, Règne Anim., i, 1829, 459.—*Trogon auratus* Swainson, Anim. in Menag., pt. iii, Jan. 1, 1838, 329 (new name for *T. collaris* Vieillot); Birds Brazil, Mex., etc., 1841?, pls. 61, 62.—? *Trogon eytoni* Fraser, Proc. Zool. Soc. Lond., 1856 (pub. May 8, 1857), 368, in text (Rio de Janeiro, Brazil).—[*Trogon*] *exoptatus* Cabanis and Heine, Mus. Hein., iv, Feb., 1863, 179 (Puerto Cabello, Venezuela; coll. Heine Mus.).—*Trogon curucui* (not of Linnaeus) Hahn, Vög. As., Afr., Am., etc., Lief. vii, 1820, pl. 3.—[*Trogon*] *curucui* Cabanis and Heine, Mus. Hein., iv, 1863, 176; Hellmayr, Abh. der K. Bayer. Akad. der Wiss., ii, Kl. xxii, Bd. iii, 1906, 596.—? *Trogon* *virginalis* Cabanis and Heine, Mus. Hein., iv, Jan., 1863, 173 (Pallatanga, w. Ecuador; coll. Heine Mus.).

<sup>b</sup> *Trogon personata* Gould, Ann. and Mag. N. H., ix, 1842, 237 (Peru; coll. J. Gould).—[*Trogon*] *personatus* Gray, Gen. Birds, i, 1845, 70.—*Trogon personatus* Gould, Mon. Trog., ed. ii, 1875, pl. 10 and text; Grant, Cat. Birds Brit. Mus., xvii, 1892, 446.—[*Trogonurus*] *personatus* Bonaparte, Consp. Voluc. Zygod., 1854, 14.—*Trogon heliothrix* Tschudi, in Wieg. Archiv für Naturg., 1844, 300; Fauna Peruana, 1845–1846, 41, 257.—*Trogon personatus heliothrix* Taczanowski, Orn. du Pérou, iii, 1886, 167.—*Trogon assimilis* Gould, Proc. Zool. Soc. Lond., Oct., 1846, 67; Ann. and Mag. N. H., xviii, 1846, 349 (Peru; coll. J. Gould).—[*Trogonurus*] *assimilis* Bonaparte, Consp. Voluc. Zygod., 1854, 14.—[*Trogon*] *propinquus* Cabanis and Heine, Mus. Hein., iv, Jan., 1863, 175 (Puellaró, Ecuador; coll. Heine Mus.).—*Trogon personatus propinquus* Berlepsch and Taczanowski, Proc. Zool. Soc. Lond., 1884, 307 (Cayandedel and Chaguarpata, Ecuador; crit.).

These two species undoubtedly require subdivision, some of the names given in the synonymy without doubt representing more or less well-defined subspecies; but I have neither the material nor time required for the satisfactory working out of the question.

- d. Middle rectrices bronze-green or greenish bronze. (Tropical South America.)  
**Trogonurus curucui curucui**, and other subspecies (extralimital).<sup>a</sup>
- dd. Middle rectrices metallic pure green, bluish green, or greenish blue; lateral rectrices more broadly barred. (Southern Honduras to Panamá.)  
**Trogonurus curucui tenellus**, adult male (p. 781).
- aa. Head, chest, and upper parts brownish (without metallic coloring), the middle pair of rectrices more rufescent. (*Adult females*.)
- b. A conspicuous auricular spot of dull white; lower breast white.
- c. Lateral rectrices very irregularly barred or mottled with grayish dusky. (*Trogonurus ambiguus*.)
- d. Darker and browner above and on chest, the middle rectrices cinnamon-rufous or light chestnut; red of posterior under parts deeper.
- Trogonurus ambiguus ambiguus**, adult female (p. 768).
- dd. Paler and grayer above and on chest, the middle rectrices cinnamon; red of posterior under parts paler.
- Trogonurus ambiguus goldmani**, adult female (p. 772).
- cc. Lateral rectrices regularly barred with grayish black.
- Trogonurus elegans**, adult female (p. 773).
- bb. No white auricular spot; lower breast not white.
- c. Posterior under parts red or orange.
- d. Posterior under parts red.
- e. Breast brown (paler and sometimes more grayish posteriorly), with an imperfectly developed white band across anterior margin; lateral rectrices broadly barred with white on outer web.
- Trogonurus mexicanus**, adult female (p. 765).
- ee. Breast red (like abdomen, etc.) bordered anteriorly by a conspicuous band of white.

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<sup>a</sup> There are, apparently, at least four definable South American forms of this species; but as both material and time are lacking for properly working them out, I can here only cite the various names which are applicable to them as a whole: [*Trogon*] *curucui* Linnæus, Syst. Nat., ed. 12, i, 1766, 167 (based essentially on *Yellow-bellied Green Cuckow* Edwards, Gleanings Nat. Hist., iii, 256, pl. 331).—[*Trogon curucui*] *γ*. Gmelin, Syst. Nat., i, pt. 1, 1788, 403.—[*Trogon rufus* Gmelin, Syst. Nat., i, pt. 1, 1788, 404 (Cayenne; based on *Couroucou à queue rousse de Cayenne* Buffon, Hist. Nat. Ois., vi, 293; Pl. Enl., pl. 736; = adult female).—*Trogon atricollis* Vieillot, Nouv. Dict. d'Hist. Nat., viii, 1817, 318 (Guiana; Surinám; etc.); Gal. Ois., i, 1825, 17, pl. 31; Gould, Mon. Trog., ed. 1, 1838, pl. 8, and text; ed. 2, 1875, pl. 14 and text; Grant, Cat. Birds Brit. Mus., xvii, 1892, 455, part.—*P[othinus] atricollis* Cabanis and Heine, Mus. Hein., iv, Feb., 1863, 180 (Brazil).—*Trogon lepturus* Swainson, Anim. in Menag., pt. iii, Jan. 1, 1838, 331 (Cayenne).—*Trogon sulphureus* Spix, Av. Bras., i, 1824–1826, 48, pl. 38, figs. 1, 2 (Tabatinga, Brazil).—*Trogon chrysochloros* Pelzeln, Sitz. Ak. Wien, xx, 1856, 496, 505 (Ypanema Brazil).—*Trogon atricollis chrysochlorus* Berlepsch and Ihering, Zeitschr. Orn., 1885, 160.—*?A[ganus] devillei* Cabanis and Heine, Mus. Hein., v, Feb., 1863, 191, footnote (Santa Maria, upper Amazon).

In adopting as the earliest name for this species *Trogon curucui* Linnæus, I am conscious of the fact that Mr. Hellmayr, for whose determinations I have the greatest respect, has reached a different conclusion by identifying the name in question with *T. collaris* Vieillot. It is true that Linnæus's *T. curucui*, a composite species, includes *T. collaris* as well as the present species, and that the majority of the references cited belong to *T. collaris*; but the diagnosis is evidently based solely on the Yellow-bellied Green Cuckow of Edwards, which is unquestionably the species generally known as *Trogon atricollis* Vieillot, the phrase "*subtus fulvus*," instead of being an erroneous translation, being, to my mind, intended to describe the color as represented on Edwards's plate, or, possibly, a slip or misprint for "*subtus flavus*."

*f.* Loral, orbital, auricular, and malar regions, chin, and throat, black; lateral rectrices regularly barred with black and white; maxilla yellow, like mandible.

**Trogonurus personatus**, adult female (extralimital).

*ff.* Loral, orbital, auricular, and malar regions, chin, and throat, dull brownish or dusky grayish; lateral rectrices without regular bars; maxilla mostly black.

*g.* Loral, orbital, and auricular regions, etc., dusky grayish; white tip to lateral rectrices narrow. **Trogonurus puella**, adult female (p. 776).

*gg.* Loral, orbital, and auricular regions, etc., dull brownish; white tip to lateral rectrices broad.

**Trogonurus collaris**, adult female (extralimital).

*d.* Posterior under parts orange, orange-red, or salmon-pinkish. (*Trogonurus aurantiiventris*.)

*e.* Posterior under parts light reddish orange.

**Trogonurus aurantiiventris aurantiiventris**, adult female (p. 779).

*ee.* Posterior under parts salmon-pink.

**Trogonurus aurantiiventris underwoodi**, adult female (p. 780).

*cc.* Posterior under parts yellow. **Trogon curucui tenellus**, adult female (p. 781).

## TROGONURUS MEXICANUS (Swainson).

### MEXICAN TROGON.

*Adult male*.—Above bright metallic green, bronze-green, or bronze, the middle pair of rectrices metallic green or bluish green, abruptly tipped with black; wings dark slaty or slate-blackish, the wing-coverts and secondaries finely vermiculated with grayish white; tail (except middle pair of rectrices) black, the three outer pairs of rectrices broadly and abruptly tipped with white; loral, orbital, auricular, and malar regions, chin, and throat dull black or slate-black; chest metallic green or bronze-green, bordered posteriorly by a broad bar or band of white across upper breast; rest of under parts pure red (geranium red), the thighs slate-black; bill yellow; feet brownish (in dried skins); length (skins), 275–313 (292); wing, 138.5–152 (145.6); tail, 165.5–190 (179.9); culmen, 15.5–17.5 (16.5); tarsus, 15–16 (15.3); inner anterior toe, 14–15 (14.3).<sup>a</sup>

*Adult female*.—General color of upper parts brown (nearly raw umber to more grayish brown—rarely hair brown), the middle pair of rectrices mars brown or nearly russet, abruptly tipped with black (more narrowly than in adult male), sometimes with a narrow sub-terminal band of paler brown, cinnamomeous, or buffy; wing-coverts and secondaries vermiculated with pale brown, or dull buffy, and dusky; outer webs of primaries broadly edged with dull white, the innermost with outer web wholly white (abruptly) basally; rectrices (except middle pair) dull black, the three outer pairs broadly tipped with white and with terminal half (more or less) of outer web white, broadly barred with blackish, the terminal white on inner web

<sup>a</sup>Sixteen specimens.



forming a narrow wedge running along inner side, next to shaft, the edge of inner web of these rectrices also notched with white; a white orbital ring (interrupted immediately above and below eye) the sides of head otherwise more dusky than the general color, especially on loreal and suborbital regions; chin, throat, and chest brown, like upper parts; breast paler brown, with a more or less distinct band of white across upper portion, the brown passing gradually into, or at least not abruptly contrasted with, the geranium red or deep geranium pink of remaining under parts;<sup>a</sup> maxilla blackish, sometimes paler at tip; mandible yellowish brown or brownish; feet brownish; length (skin), 285–310 (302); wing, 136–157.5 (142.8); tail, 175–200 (184.5); culmen, 14.5–17 (15.9); tarsus, 14–16 (15.2); inner anterior toe, 13–15 (14.2).<sup>b</sup>

*Immature male*.—Similar to the adult male, but with white tail-markings as in adult female, the middle pair of rectrices metallic green, narrowly tipped, or mottled at tip, with pale buffy brown or cinnamon.<sup>c</sup>

*Immature female*.—Similar to the adult female, but middle pair of rectrices narrowly tipped with buff or whitish (instead of black), and proximal greater wing-coverts and secondaries (tertials) more or less (sometimes conspicuously) spotted with pale buff.

*Young (first plumage)*.—Head, neck, chest, back, and scapulars plain tawny-brown or raw umber, the suborbital region dusky; rump and upper tail-coverts lighter and more rufescent brown (nearly cinnamon) the feathers narrowly and indistinctly tipped with dusky; under parts, posterior to chest, brownish buff or clay color, barred or transversely spotted with brown; wing-coverts and tertials each with a very large roundish spot of pale buff, margined with blackish; primaries and rectrices as in the immature female.

<sup>a</sup> Sometimes the brown feathers of the breast are narrowly tipped with paler, producing an indistinctly barred appearance.

<sup>b</sup> Fourteen specimens.

| Locality.                              | Wing. | Tail. | Culmen. | Tarsus. | Inner anterior toe. |
|----------------------------------------|-------|-------|---------|---------|---------------------|
| MALES.                                 |       |       |         |         |                     |
| Eleven adult males from Mexico.....    | 147.6 | 181.5 | 16.6    | 15.3    | 14.3                |
| Five adult males from Guatemala.....   | 141.1 | 176.4 | 16.3    | 15.3    | 14.1                |
| FEMALES.                               |       |       |         |         |                     |
| Ten adult females from Mexico.....     | 145.4 | 186.8 | 15.8    | 15.1    | 14.3                |
| Four adult females from Guatemala..... | 139   | 178.6 | 15.9    | 15.5    | 14.1                |

<sup>c</sup> In still younger specimens the proximal greater coverts and secondaries (tertials) have terminal spots of buff or whitish and the upper breast partly light brownish (sometimes narrowly barred).

Mexico, in States of Tamaulipas (Rampahuila; Galindo; Guiaves; Rio Santo; Montelunga; Alta Mira; Realito), Chihuahua (Sierra Madre near Guadalupe y Calvo; Jesús Maria; Sierra Madre, 65 miles east of Batópolis), Zacatecas (Sierra de Valparaiso), Jalisco (Sierra Nevada de Colima; San Sebastián; Bolaños; Sierra de Bolaños), Colima, Michoacán (Coapa; Patzcuaro; Mount Tancitaro), Guerrero (Omiteme), Mexico (Ajusco; Rio Frio, Ixtaccihuatl; Popocatepetl; Tenango; Chimalpa; Temascaltepec; Valley of Mexico; Tenango del Valle), Hidalgo (Reál del Monte), Puebla (Huanchinango), Vera Cruz (Orizaba; Jalapa; Jico; Cofre de Perote; Coátepec), Oaxaca (La Parada; Cinco Señores; Reyes; 15 miles west of Oaxaca City; Mount Zempoaltepec; Villa Alta; Reál Arriba), and Chiapas (Pinabete; San Cristóbal) and Territory of Tepic (Sierra de Nayarit) and highlands of Guatemala (Sierra de Santa Cruz; San Gerónimo; Chuacus and Calderas, Volcán de Fuego; Todos Santos; Sierra Santa Elena; Tecpán; Uspantán, Quitché; Volcán de Santa Maria, San Martín, and Cuipaché, Quezaltenango; Baja Vera Paz).

*Trogon mexicanus* SWAINSON, Philos. Mag., n. s., i, 1827, 440 (Temascaltepec, Mexico;=adult female); Zool. Illustr., ser. 2, 1831-1833, pls. 82 (immature male), 107 (adult female); Classif. Birds, ii, 1837, 337.—WAGLER, Isis, 1831, 523.—BONAPARTE, Proc. Zool. Soc. Lond., 1837, 109 (Mexico).—GOULD, Mon. Trog., ed. 1, 1838, pls. 1, 2, and text; ed. 2, 1875, pl. 7, and text.—HARTLAUB, Verz. Mus. Brem., 1844, 11 (Mexico; Guatemala).—GRAY, Cat. Fissir. Birds Brit. Mus., 1848, 41 (Mexico).—SCLATER, Proc. Zool. Soc. Lond., 1859, 367 (Jalapa, Vera Cruz), 387 (Cinco Señores, Oaxaca); Cat. Am. Birds, 1862, 276 (San Gerónimo, Guatemala).—SCLATER and SALVIN, Ibis, 1859, 132 (Guatemala).—SALVIN and SCLATER, Ibis, 1860, 41 (Volcán de Fuego, Guatemala; color of eyelids).—SUMICHRIST, Mem. Bost. Soc. N. H., i, 1869, 562 (alpine region Vera Cruz); La Naturaleza, v, 1881, 239 (alpine region of Orizaba, Vera Cruz).—FERRARI-PEREZ, Proc. U. S. Nat. Mus., ix, 1886, 161 (Cerro de San Mateo, Puebla; Jalapa).—GRANT, Cat. Birds Brit. Mus., xvii, 1892, 444 (Sierra de Nayarit, Sierra de Bolaños, and Santa Ana, Jalisco; Sierra Nevada, Colima; Chimalpa, Coapa, Tenango del Valle, near City of Mexico, and Rio Frio, Ixtaccihuatl, Mexico; Coátepec and Cofre de Perote, Vera Cruz; Villa Alta and Juchatengo, Oaxaca; Omiteme, Guerrero; Santa Cruz Mts., San Gerónimo, Volcán de Fuego, Santa Maria, San Martín, and Cuipaché, near Quezaltenango, Guatemala).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1896, 487.—DEARBORN, Pub. 125, Field Mus. N. H., 1907, 87 (above Tecpán, Guatemala, 9,500 ft.).—PHILLIPS, Auk., xxviii, 1911, 76 (Rampahuila, Montelunga, Alta Mira, Rio Santo, Galindo, Guiaves, and Realito, Tamaulipas).

*T[rogon] mexicanus* GRAY, Gen. Birds, i, 1845, 70.—BONAPARTE, Consp. Av., i, 1850, 150.—CABANIS and HEINE, Mus. Hein., iv, 1863, 137 (Mexico).—RIDGWAY, Man. N. Am. Birds, 1887, 276.

[*Trogon*] *mexicanus* GRAY, Hand-list, i, 1869, 82, no. 969.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 103.—SHARPE, Hand-list, ii, 1900, 147.

[*Trogonurus*] *mexicanus* BONAPARTE, Consp. Voluc. Zygod., 1854, 14.

*Trogon glocitans* LICHTENSTEIN, Preis-Verz. Mex. Thierw., 1830, 1; Journ. für Orn., 1863, 55.

“*Trogon morgani* Swains”[on] GOULD, Mon. Trog., ed. 1, 1838, in text to pl. 1.

## TROGONURUS AMBIGUUS AMBIGUUS (Gould).

## COPPERY-TAILED TROGON.

*Adult male*.—Forehead (sometimes part, occasionally whole, of crown also) black; occiput (usually more or less of crown), hindneck, back, scapulars, and anterior portion of lesser wing-covert region bright metallic green, bronze-green, or golden bronze, passing into metallic pure green or bronze-green on rump and upper tail-coverts; middle pair of rectrices bright bronze or copper-bronze, changing to a greenish hue in some lights (the color sometimes more greenish basally), broadly and abruptly tipped with black or bluish black, the next pair of rectrices similarly colored on outer web, but inner web darker and more purplish bronze passing into blackish basally, the terminal black area broader and less sharply defined; remaining rectrices very broadly tipped with white (this white terminal area margined basally by a narrow, usually more or less interrupted, narrow bar of black), the subterminal portion and greater part of outer web white, irregularly vermiculated or finely flecked with blackish (except sometimes on basal portion of outer web of outermost rectrix), the basal portion of inner web uniform blackish; wing-coverts (except anterior portion of lesser covert area) delicately vermiculated with black and white; primaries slate-black, the outer webs mostly pale gray or grayish white; loral, suborbital, auricular, and malar regions, chin, and throat uniform black or slate-black; chest bright metallic bronze-green, bronze, or copper-bronze, succeeded by a crescentic band of pure white, the remaining under parts pure geranium red; thighs slate-black or blackish slate, the longer feather broadly tipped with pink or pinkish white; bill yellow; naked eyelids red or orange; iris dark brown; feet brownish; length (skins), 255–295 (278); wing, 127–136 (130.8); tail, 153.5–171 (165.6); culmen, 17–19 (18.2); tarsus, 14.5–16 (15); inner anterior toe, 14–16.5 (14.9).<sup>a</sup>

*Adult female*.—Forehead and at least anterior portion of crown slate color or brownish slate, passing into plain brown (between isabella color and raw umber) on occiput, hindneck, back, and scapulars, the rump and upper tail-coverts similar but (especially the latter) paler; wing-coverts similar in color to rump and upper tail-coverts but (on very close inspection) minutely vermiculated with darker, the outer webs of secondaries similar but paler; primaries slate color or blackish slate, the outer web (except of outermost) broadly edged with white or grayish white; middle pair of rectrices vandyke brown to chocolate brown (sometimes lightening into russet or cinnamon-brown distally), broadly and abruptly tipped with black; next pair blackish brown or brownish black, the outer web more or less broadly edged (except terminally) with lighter brown; remaining rectrices extensively white terminally and (except on third

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<sup>a</sup> Thirteen specimens.



rectrix) on greater part of outer web, a broad terminal area immaculate, the remainder of white portion, except middle portion of outer web of outermost rectrix, more or less broadly and irregularly barred with blackish or dark slaty, the basal portion of these rectrices uniformly of the latter color; loreal and suborbital regions dark slaty or blackish; auricular region crossed obliquely by a broad bar of pale brownish buff or brownish white and tipped by an oblique bar of black; a broad brownish white orbital ring, interrupted on upper and lower eyelids; malar region, chin, and throat brownish slate to grayish brown (hair brown), passing into brown (like color of back) on chest; breast much paler brown, fading posteriorly into brownish white, and crossed anteriorly (immediately behind brown jugular area) by a crescentic band of brownish white or pale brownish buff; lower abdomen, flanks, anal region, and under tail-coverts light geranium red; thighs slate color, the longer feathers broadly tipped with whitish; bill yellow (duller than in adult male), the maxilla sometimes tinged with brownish; iris and feet as in adult male; length (skins), 275–302 (290); wing, 124–137 (132); tail, 165–185 (176.5); culmen, 16.5–18 (17.2); tarsus, 14.5–15.5 (15.1); inner anterior toe, 14–15.5 (14.7).<sup>a</sup>

*Immature male*.—Similar to the adult male, but tail (except middle rectrices) as in adult female, the middle rectrices greenish bronze or bronze-green, passing into light russet-brown or cinnamon at tip. (Younger individuals have the breast, below the white post-jugular band, pale buffy grayish narrowly barred or vermiculated with darker, passing into buffy white posteriorly, and secondaries with a terminal spot of whitish.)

<sup>a</sup> Thirteen specimens.

| Locality.                                                                                                       | Wing. | Tail. | Culmen. | Tarsus. | Inner anterior toe. |
|-----------------------------------------------------------------------------------------------------------------|-------|-------|---------|---------|---------------------|
| MALES.                                                                                                          |       |       |         |         |                     |
| Six adult males from Tamaulipas (1), Nuevo León (3), Chihuahua (1), and Durango (1).....                        | 131.3 | 167.7 | 17.7    | 15.3    | 15                  |
| Seven adult males from Jalisco (5) and Tepic (2).....                                                           | 130.4 | 163.4 | 18.6    | 14.8    | 14.9                |
| Five adult males of <i>T. a. goldmani</i> from Tres Marias Islands...                                           | 129.9 | 155.8 | 18.3    | 15.9    | 15.3                |
| FEMALES.                                                                                                        |       |       |         |         |                     |
| Six adult females from Tamaulipas (2), Nuevo León (1), Chihuahua (1), San Luis Potosí (1), and Durango (1)..... | 134.3 | 178.8 | 16.9    | 15.1    | 14.6                |
| Seven adult females from Sinaloa (1), Tepic (2), and Jalisco (4)...                                             | 130   | 174.5 | 17.4    | 15.2    | 14.7                |
| Four adult females of <i>T. a. goldmani</i> from Tres Marias Islands...                                         | 133   | 175.1 | 18      | 16.2    | 15.4                |

The variation in color of the back, etc., from nearly pure metallic green to golden bronze and in the hue of the middle rectrices occurs in both series of the mainland birds, the extremes sometimes being shown in specimens from one locality.

*Immature female*.—Similar to the adult female, but middle rectrices narrowly tipped with blackish, wing-coverts and secondaries more or less (according to age) spotted with pale buff or buffy whitish, and red of under parts replaced (at least in part) by white.

*Young male*.<sup>a</sup>—Head dull brownish gray, darker above, paler beneath, more tinged with olive-brownish posteriorly; lores and suborbital region blackish gray; a small spot on malar apex, a conspicuous orbital ring (interrupted on middle portion of upper eyelid and on anterior half or more of lower lid) and broad bar crossing obliquely the middle portion of auricular region pure white; back and scapulars grayish brown (interspersed with a few metallic bronze-green feathers of the adult plumage); rump and upper tail-coverts dull cinnamon-brown, mixed with a few feathers of pure metallic green (of adult livery); middle rectrices dusky, passing into dull cinnamon-brown on edges and toward tips (the latter narrowly black at extremity) and glossed with coppery bronze; next two pairs of rectrices uniform black; two outer rectrices with outer webs pure white (except basally), barred with black, the inner webs chiefly black, but passing into pure white terminally and on edges, the white portion barred with black; lesser and middle wing-coverts buffy white or very pale buff, margined with black, producing conspicuous large spots; greater coverts and tertials pale grayish buffy, minutely freckled with dusky, and each terminated by a large spot of buffy white (nearly pure white on tertials); secondaries dusky, edged with freckled pale grayish buffy; primaries blackish dusky, edged with pure white; breast, belly, sides, flanks, anal region, and lower tail-coverts dull white or grayish white, marked with rather broad but more or less irregular transverse bars of grayish brown, this nearly uniform on sides of breast, the flanks, anal region, and crissum nearly immaculate whitish; bill bright yellow; feet pale brownish gray (in dried skin).

*Young female (nestling)*.—Pileum dull grayish brown (between hair brown and sepia) the feathers narrowly tipped with blackish; hindneck, back, scapulars, rump, and upper tail-coverts plain brown (between bister and sepia); wing-coverts (except distal greater coverts) and proximal secondaries (tertials) with a very large sub-terminal roundish spot of pale buff margined with black, the basal portion of the feathers vermiculated or freckled with grayish brown and pale grayish buffy, the distal greater coverts and secondaries light buffy grayish brown finely vermiculated with dusky, the former rather narrowly tipped with pale buffy; alula, primary coverts, and primaries dull blackish slate edged with paler, the edgings broader

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<sup>a</sup> Described from no. 109523, coll. U. S. Nat. Mus., Huachuca Mts., Arizona, Aug. 24, 1885; Lieut. H. C. Benson, U. S. A.

and more whitish on longer primaries; middle pair of rectrices deep bronzy or coppery brown, the distal portion cinnamon-brown narrowly tipped with black; next three pairs black, the two lateral pairs mostly white barred, except for a large terminal area, with black; loreal and suborbital regions dusky; an incomplete white orbital ring, and an oblique patch of dull white across auricular region, the terminal portion of the latter blackish; malar region, chin, throat, and chest grayish brown, the lower chest with feathers narrowly and indistinctly tipped with dusky; a rather broad white band (sharply defined on both sides) across upper breast; rest of under parts buffy white broadly barred with grayish brown, the bars more faint posteriorly, but anteriorly broader and coalescing into a definite band next to the white band across upper breast.

From southern Arizona (Huachuca, Santa Catalina, and eastern side of San Luís Mountains; mountains near Tombstone) and extreme southern Texas (Fort Brown) southward over greater part of Mexico, in States of Sonora (Álamos; Ysleta), Chihuahua (Batópolis; Durasno; Rio San Juan; Piños Altos; Bravo; Barranca de Cobre), Nuevo León (Boquillo; Cerro de la Silla; Monteréy; Montemorelos; Bacaro; Rio Camacho; Villa Grande, Hacienda de la Cruz), Tamaulipas (Sierra Madre above Ciudad Victoria; Soto la Marina; Tautina; Tampico; Alta Mira; Xicotencatl; Rio Corono; Rio Pilón; San Augustín; Santa Leonora; Rio Martinez; Galindo; Guiaves; Montelunga; Rio de la Cruz; Realito), San Luís Potosí (Villár; Vallés; Sierra de San Luís Potosí), Durango (Chacalá; Arroyo del Buéy), Zacatecas (Sierra de Valparaiso), Jalisco (Bolaños; Zapotlán; Sierra Madre; Angostura; Barranca Ibarra; Las Palmas; Ixtapa; Guadalajara; Ameca; Hacienda San Marcos; Hacienda San Felipe de Hajar; Plantanár), Sinaloa (Mazatlán; Presidio de Mazatlán; Rio Acoparuta; Escuinapa; Rio Juana Gomez; Mount Juan Lisiarraga; Arroyo de Los Pielas; Los Limones), Michoacán (Mount Tancitaro), Mexico (Coajimalpa), Puebla (Chietla; Chachapa), Vera Cruz (Orizaba), Oaxaca (Talea; Xacáutepec; Juchatengo), and Guerrero (Amula; Omilteme) and Territory of Tepic (San Blas; Santiago; Mescatitlán; Rancho El Colomo, Compostella; Sierra de Nayarit).

*Trogon ambiguus* GOULD, Proc. Zool. Soc. Lond., 1835, 30 (northern Mexico); Mon. Trog., ed. 1, 1838, pl. 4 and text; ed. 2, 1858, pl. 8 and text.—SCLATER, Proc. Zool. Soc. Lond., 1859, 387 (Talea, Oaxaca).—SUMICHRIST, Mem. Bost. Soc. N. H., i, 1869, 562 (alpine region Vera Cruz); La Naturaleza, v, 1881, 239 (alpine region of Orizaba, Vera Cruz).—FINSCH, Abh. Nat. Mus. Brem., 1870, 326 (Mazatlán, Sinaloa).—MERRILL, Proc. U. S. Nat. Mus., i, 1878, 118, footnote (Ft. Brown, Texas).—RIDGWAY, Proc. U. S. Nat. Mus., iii, 1880, 6, 190, 229; ix, 1886, 161 (descr. adult male; crit.); x, 1887, 147 (Huachuca Mts., Arizona, etc.; crit.); Nom. N. Am. Birds, 1881, no. 384; Auk, iv, 1887, 161 (Huachuca Mts.).—COUES, Check List, 2d ed., 1882, no.



422.—AMERICAN ORNITHOLOGISTS' UNION, Check List, 1886, no. 389; 3d ed., 1910, 183.—FERRARI-PEREZ, Proc. U. S. Nat. Mus., ix, 1886, 161 (Chietla, Puebla).—GRANT, Cat. Birds Brit. Mus., xvii, 1892, 451 (Sierra Madre, Zapotlán, etc., Jalisco; San Blas, Tepic; Amula and Omilteme, Guerrero; Oaxaca; etc.).—JOUY, Proc. U. S. Nat. Mus., xvi, 1893, 785 (Angostura and Barranca Ibarra, Jalisco).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1896, 490.—RICHMOND, Proc. U. S. Nat. Mus., xviii, 1895, 629 (Alta Mira, Tamaulipas).—BENDIRE, Life Hist. N. Am. Birds, ii, 1895, 32.—SWARTH, Pacific Coast Avifauna, no. 4, 1904, 10 (Huachuca Mts.).—MILLER (W. DeW.), Bull. Am. Mus. N. H., xxi, 1905, 350 (Escuinapa, etc., Sinaloa; habits); xxii, 1906, 164 (Arroyo del Buéy, Durango).—PHILLIPS, Auk, xxviii, 1911, 76 (Santa Leonora, Rio Martinez, Galindo, Guiaves, Montelunga, Rio de la Cruz, and Realito, Tamaulipas).

[*Trogon*] *ambiguus* GRAY, Gen. Birds, i, 1845, 69.—BONAPARTE, Consp. Av., i, 1850, 149.—CABANIS and HEINE, Mus. Hein., iv, 1863, 169.—COUES, Key N. Am. Birds, 2d ed., 1884, 468.—RIDGWAY, Man. N. Am. Birds, 1887, 276.

[*Trogon*] *ambiguus* GRAY, Hand-list, i, 1869, 82, no. 971.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 103.—SHARPE, Hand-list, ii, 1900, 148.

[*Trogonurus*] *ambiguus* BONAPARTE, Consp. Voluc. Zygod., 1854, 14.

*Trogon mexicanus* (not of Swainson) BAIRD, Rep. Pacific R. R. Surv., ix, 1858, 69 (Boquillo, Nuevo León); ed. 1860 (Birds N. Am.), 69, atlas, pl. 40, fig. 1; Rep. U. S. and Mex. Bound. Surv., ii, pt. 2, 1859, pl. 2 (Boquillo); Cat. N. Am. Birds, 1859, no. 65.—ORTON, Am. Nat., iv, 1871, 711 ("Texas," spec. in Mus. Vassar College).—COUES, Check List, 1873, no. 284.

[*Trogon*] *mexicanus*? COUES, Key N. Am. Birds, 1872, 186.

*Trogon* ———? SCOTT, Auk, iii, 1886, 425 (Santa Catalina Mts., Arizona).

(?) *Trogon puella* (not of Gould?) DUGÉS, La Natureza, i, 1873, 139 (Guana juato and Guadalajara).

### TROGONURUS AMBIGUUS GOLDMANI (Nelson).

#### GOLDMAN'S TROGON.

Similar to *T. a. ambiguus*, but adult males greener above, never(?) distinctly bronzy, the middle rectrices bronze-green to greenish bronze, never(?) coppery; adult females much paler and grayer above and on chest (the general color hair brown, becoming mouse gray on pileum and cinnamon on middle rectrices), with red of under parts paler, breast with less of brown (sometimes mostly whitish).

*Adult male*.—Length (skins), 266–280 (271); wing, 126–133 (129.9); tail, 152.5–159.5 (155.8); culmen, 17–19 (18.3); tarsus, 15.5–16.5 (15.9); inner anterior toe, 14.5–16 (15.3).<sup>a</sup>

*Adult female*.—Length (skins), 283–295 (288); wing, 130.5–136 (133); tail, 167–183.5 (175.1); culmen, 17.5–18.5 (18); tarsus, 15–17 (16.2); inner anterior toe, 14.5–16 (15.4).<sup>b</sup>

<sup>a</sup> Five specimens.

<sup>b</sup> Four specimens.

## Tres Marias Islands (Maria Madre Island), western Mexico.

*Trogon ambiguus* (not of Gould) GRAYSON, Proc. Bost. Soc. N. H., xiv, 1871, 272' (Tres Marias Islands; habits, notes, etc.).—LAWRENCE, Mem. Bost. Soc. N. H., ii, 1874, 290, part (Tres Marias).

*Trogon ambiguus goldmani* NELSON, Proc. Biol. Soc. Wash., xii, Jan. 27, 1898, 8 (Maria Madre I., Tres Marias group, w. Mexico; coll. U. S. Nat. Mus.); N. Am. Fauna, no. 14, 1899, 42 (Tres Marias; habits).

[*Trogon*] *goldmani* SHARPE, Hand-list, ii, 1900, 148.

## TROGONURUS ELEGANS (Gould).

## ELEGANT TROGON.

Similar to *T. ambiguus*, but tail decidedly longer, adult male with lateral rectrices regularly though narrowly barred (instead of vermiculated) with black, and wing-coverts and secondaries more coarsely vermiculated, the adult female with black tip to middle rectrices much narrower and lateral rectrices regularly and more broadly barred with black.

*Adult male*.—Forehead (more or less broadly), loreal, orbital, auricular and malar regions, chin, and throat dull black; rest of head and neck, chest, back, scapulars, anterior lesser wing-coverts, rump, and upper tail-coverts bright metallic green or golden green, the rump and upper tail-coverts sometimes purer (less golden) green; middle pair of rectrices bluish golden green, broadly and abruptly tipped with black, the outer web of next two pairs similar, but inner web brownish black or blackish brown, tipped with black; three lateral pairs of rectrices with exposed portion (in closed tail) white, immaculate for a large terminal area (about 14–23 mm. long—longest on third rectrix from outside), the remainder narrowly and regularly barred with black, the black bars slightly narrower than the white interspaces and averaging about 1.5 mm. wide; wing-coverts (except anterior portion of lesser covert area) finely vermiculated or undulated with blackish slate and white; rest of wing blackish slate, the longer primaries broadly edged with white; a broad white band across upper breast (next to metallic green of chest); rest of under parts pure geranium red, the thighs blackish slate; bill yellow; naked eyelids orange;<sup>a</sup> iris dark brown;<sup>a</sup> feet (in dried skins), horn color; length (skins), 283–293 (288); wing, 128–139 (134.2); tail, 161.5–180.5 (172); culmen, 17.5–19.5 (18.3); tarsus, 14–15 (14.6); inner anterior toe, 14.5–15.5 (15).<sup>b</sup>

*Adult female*.—Forehead brownish gray (nearly mouse gray), passing into hair brown on occiput, this into broccoli brown on hindneck, back, scapulars, and lesser wing-coverts, the rump (lower portion) and

<sup>a</sup> Dearborn.

<sup>b</sup> Six specimens.

upper tail-coverts paler and more buffy brown (wood brown or isabella color), the coverts sometimes narrowly tipped with paler; middle pair of rectrices clear chestnut or deep cinnamon-rufous, sharply tipped with black, the next two pairs blackish brown, passing (more or less broadly) into chestnut or chestnut-brown on edge of outer web; three lateral rectrices, on each side, broadly tipped with white, the remaining portion white distally and on more or less of outer web, brownish black or slate-black basally, the white portion regularly and rather broadly barred with slate-black; middle and greater wing-coverts and secondaries light buffy brown, very minutely freckled or vermiculated with dusky; alula, primary coverts, and primaries dull blackish slate or slate-blackish, the primaries more brownish terminally, the longer ones broadly edged with white; loreal and suborbital regions dull slate-blackish, relieved by a conspicuous white orbital ring (interrupted on lower eyelid) and a broad white bar across subterminal portion of auricular region, the terminal portion of the latter black; malar region, chin, and throat brownish gray or grayish brown, passing into broccoli brown or isabella color on chest; a broad band of white across upper breast, passing laterally into pale buffy brownish, the lower breast pale buffy brown or buffy grayish, passing into white posteriorly and on median portion of abdomen (the brownish portion indistinctly barred with paler); flanks and sides of abdomen pure geranium red, the under tail-coverts similar but somewhat paler and usually tipped with pinkish white; thighs grayish dusky, the feathers tipped with light grayish brown; bill dull yellow; feet brownish or horn color (in dried skins); length (skins), 267–287 (275); wing, 125–134.5 (131.3); tail, 160.5–185.5 (171.3); culmen, 16–19 (17.3); tarsus, 13–15.5 (14.1); inner anterior toe, 13.5–15.5 (14.6).<sup>a</sup>

*Immature male*.—Similar to the adult male, but middle rectrices grayish brown basally, dull metallic bronze-green in middle portion, cinnamon brown or russet terminally; next two pairs brownish black on inner web and terminal portion of outer web, the outer web mostly dark sepia brown; lateral rectrices with pattern as in adult female, but bars usually less regular; vermiculated wing-coverts and secondaries tinged or stained with pale buffy brown; chest mostly grayish brown; breast as in adult female, but intermixed laterally with bright geranium red; maxilla yellowish horn color. (In younger individuals the proximal greater wing-coverts and secondaries have large terminal spots of buffy white, the ground color of the coverts and secondaries more buffy, the chest wholly brown, breast without any red, posterior under parts pink or whitish, and with a white auricular patch and incomplete orbital ring, as in adult female.)

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<sup>a</sup> Seven specimens.



Pacific slope of Central America, from Guatemala (El Rancho), through Salvad r (La Libert d; Volc n de San Migu l), Honduras (Plains of Comay gua), Nicaragua (Grenada; Chinandega; Volc n de Chinandega; Le n; Matagalpa; Lake Nicaragua; Chontales; Virgin Bay; boundary between Nicaragua and Honduras, 180 miles from Pacific coast) to Costa Rica (Bebedero; Bagaces; San Lucas Island, Gulf of Nicoya).

*Trogon elegans* GOULD, Proc. Zool. Soc. Lond., ii, 1834, 26 (Guatemala or Mexico; coll. J. Gould); Isis, Bd. xxviii, 1835, 1025; Mon. Trog., ed. 1, 1838, pl. 3 and text; ed. 2, 1869, pl. 9 and text (Honduras).—SWAINSON, Classif. Birds, ii, 1837, 337.—GRAY, Cat. Fissir. Birds Brit. Mus., 1848, 43 (Guatemala; Mexico).—SCLATER, Proc. Zool. Soc. Lond., 1858, 357 (Plain of Comay gua, Honduras).—TAYLOR, Ibis, 1860, 117 (Plain of Comay gua).—SALVIN, Ibis, 1866, 194 (Guatemala; "Mexico;" Nicaragua); 1872, 313, 322 (Lake Nicaragua and Chontales, Nicaragua).—CHERRIE, Proc. U. S. Nat. Mus., xiv, 1891, 536 (San Lucas I., Gulf of Nicoya, Costa Rica).—GRANT, Cat. Birds Brit. Mus., xvii, 1892, 449 (Virgin Bay, Chontales, and Volc n de Chinandega, Nicaragua; Comay gua, Honduras; La Libert d and Volc n de San Migu l, Salvad r).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1896, 489.—UNDERWOOD, Ibis, 1896, 443 (Bagaces, n. w. Costa Rica).—DEARBORN, Pub. 125, Field Mus. N. H., 1907, 88 (El Rancho, Guatemala).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 557 (shores of Gulf of Nicoya, w. Costa Rica).

*T[rogon] elegans* GRAY, Gen. Birds, i, 1845, 69.—BONAPARTE, Consp. Av., i, 1850, 149.—CABANIS and HEINE, Mus. Hein., iv, 1863, 170 (Guatemala; "Mexico").—RIDGWAY, Man. N. Am. Birds, 1887, 276.—HARTERT, Kat. Vogel-samml. Mus. Senckenb., 1891, 135 ("Tamaulipas").

[*Trogon*] *elegans* GRAY, Hand-list, i, 1869, 82, no. 970.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 103.—SHARPE, Hand-list, ii, 1900, 147.

[*Trogonurus*] *elegans* BONAPARTE, Consp., Voluc. Zygod., 1854, 14.

*T[rogon] personatus* (not of Gould) HARTLAUB, Verz. Mus. Brem., 1844, 12 (Guatemala).

*C[alurus] auriceps* (not of Gould) HARTLAUB, Verz. Mus. Brem., 1844, 12 (Guatemala; supposed female).

### TROGONURUS PUELLA (Gould).

#### JALAPA TROGON.

*Adult male*.—Upper parts (except wings) metallic golden green, occasionally varying to metallic grass green or (as the other extreme) almost golden bronze, the middle rectrices abruptly tipped with black; second and third pairs of rectrices with outer web metallic green, tipped with black (like middle pair), but inner web wholly black; three outer pairs black, tipped with white (the white tip varying from 1.5 to, rarely, 9 mm. in width),<sup>a</sup> the remainder black, narrowly barred with white (the white bars much less than half as

<sup>a</sup> Very rarely the white terminal bar is narrowly margined terminally with black.

wide as the black interspaces), the white bars wanting from greater part of inner web of third rectrix (from outside); wings black, the lesser wing-coverts (except anterior portion of the area) narrowly and irregularly barred with white, the greater coverts and secondaries finely vermiculated with the same, the longer primaries edged with white, especially toward base; loreal, orbital, auricular, and malar regions, chin, and throat black; chest metallic green or golden green, like upper parts; a broad white bar or band across upper breast (next to metallic green jugular area); rest of under parts pure deep geranium red, the thighs slate-black; bill yellow; naked eyelids brown;<sup>a</sup> iris dark brown;<sup>a</sup> feet brownish or horn color (in dried skins); length (skins), 226–272 (252); wing, 115–138 (126.6); tail, 127.5–160 (142.6); culmen, 16–18 (16.9); tarsus, 12–16 (14.4); inner anterior toe, 11.5–15 (13.4).<sup>b</sup>

*Adult female*.—Above plain brown, the color darker (between prouts brown and raw umber) on pileum, more tawny or rufescent (nearly tawny-olive or russet) on lower rump and upper tail-coverts, the middle pair of rectrices chestnut, sharply tipped with black; outer web of next two rectrices chestnut tipped with black, but inner web wholly brownish black; three outer pairs of rectrices mostly black on upper surface, grayish on under surface, rather narrowly tipped with white and crossed by a subterminal narrow band or bar of black, preceding which the general grayish color is paler distally and next to the subterminal black bar more or less vermiculated with darker, the outer web whitish gray, with or without minute vermiculations or freckles, growing darker basally; wing-coverts brown (paler and more grayish than color of back) minutely vermiculated or freckled with dusky, the secondaries similar but with ground color sometimes slightly paler; primaries slate-black or blackish slate conspicuously edged with white, except on shorter proximal and outermost quills; a white orbital ring, broadly interrupted on upper and lower eyelids; orbital region otherwise, together with loreal, auricular, and malar regions, dusky, or dull blackish slate, the chin and throat somewhat lighter dull slaty; chest uniform brown, like color of back; rest of under parts as in adult male; maxilla blackish, the lower basal portion pale yellowish horn color or dull yellowish, the mandible dull yellowish (olive-yellow in life);<sup>c</sup> naked eyelids dusky;<sup>c</sup> iris umber brown;<sup>c</sup> feet brownish or dusky (light horn color in life);<sup>c</sup> length (skins), 233–270 (248); wing, 120–136.5 (127.1); tail, 132.5–159

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<sup>a</sup> Dearborn.

<sup>b</sup> Thirty-five specimens.

<sup>c</sup> Fresh colors of specimens shot by the writer in Costa Rica.

(144.9); culmen, 16–17 (16.3); tarsus, 13.5–15.5 (14.4) · inner anterior toe, 12–14 (12.9).<sup>a</sup>

Southeastern Mexico, in States of Vera Cruz (Jalapa; Orizaba; Buena Vista; Cofre de Perote; Coátepec; Vega de Casadero; Misantla; Córdoba; Uvero; Atoyác; Playa Vicente), Puebla (Metlaltoyuca), Mexico ("near City of Mexico"), Oaxaca (Chimalapa; Guichicovi), Tabasco (Teapa), Chiapas (Chicharras; Tumbalá), Campeche (Apazote), Yucatán (Tizimín; Izamál; Chichen-Itza), and southward through Guatemala (Pié de la Cuesta; Santa Maria, Quezaltenango; Retalhuleu; Tolimán; Telemán; Médio Monte; Alotenango; Dueñas; Choctúm; Escuintla; Chiriquya, near Cobán; Yaxcamnál; Patulúl, Sololá), British Honduras (Western District), Honduras, Nicaragua (San Rafael del Norte; Matagalpa), and Costa Rica (Volcán de Irazú; Azahár, Navarro, Naranjo, and Birris, Cartago; Turrialba; Angostura; San Juan; San Carlos; Juan Viñas; Bonilla; Guayabo; Coliblanco; Cedrál de Escazú; Escazú; Cerro de la Candelária; San Mateo; Barranca; Copéy; Dota; Santa Maria de Dota) to western Panamá (Volcán de Chiriquí; Boquete; David; Calovévora; Castillo; Santa Fé de Verágua; Cordillera de Tolé).

*Trogon puella* GOULD, Proc. Zool. Soc. Lond., xiii, 1845 (pub. April, 1845), 18 (Escuintla, "S. Am.," i. e., w. Guatemala; coll. J. Gould); Mon. Trog., ed. 2, 1858, pl. 11 and text.—SCLATER, Proc. Zool. Soc. Lond., 1856, 286 (Córdova, Vera Cruz); 1859, 367 (Jalapa, Vera Cruz), 387 (Playa Vicente, Vera Cruz); Cat. Am. Birds, 1862, 276 (Guatemala).—SCLATER and SALVIN, Ibis, 1859, 132 (Pacific slope of Guatemala).—CABANIS, Journ. für Orn., 1862 173 (Costa Rica).—LAWRENCE, Ann. Lyc. N. Y., ix, 1868, 118 (Dota, Turrialba, Birris, and San Juan, Costa Rica); Bull. U. S. Nat. Mus., no. 4, 1876, 31 (Guichicovi and Chimalapa, Oaxaca).—SALVADORI, Atti Torino, iv, 1868, 181 (Costa Rica).—FRANTZIUS, Journ. für Orn., 1869, 312 (Costa Rica).—

<sup>a</sup> Seventeen specimens.

| Locality.                                                                        | Wing. | Tail. | Culmen. | Tarsus. | Inner anterior toe. |
|----------------------------------------------------------------------------------|-------|-------|---------|---------|---------------------|
| MALES.                                                                           |       |       |         |         |                     |
| Ten adult males from Vera Cruz (6), Puebla (1), Oaxaca (1), and Tabasco (2)..... | 129.3 | 145.2 | 17.1    | 14.7    | 14.1                |
| Five adult males from Campeche (1) and Yucatan (4).....                          | 119.5 | 134.2 | 16.3    | 13.6    | 12.9                |
| Six adult males from Chiapas (2), Guatemala (3), and Honduras (1).....           | 127.5 | 143.8 | 16.9    | 14.5    | 13                  |
| Ten adult males from Costa Rica.....                                             | 127.6 | 143.8 | 16.9    | 14.8    | 13.4                |
| Four adult males from western Panamá.....                                        | 125.2 | 141.5 | 16.6    | 13.9    | 12.7                |
| FEMALES.                                                                         |       |       |         |         |                     |
| Three adult females from Vera Cruz.....                                          | 134   | 155.3 | 16      | 15.2    | 13.7                |
| Two adult females from Yucatan.....                                              | 122   | 136.2 | 16      | 13.7    | 12.7                |
| One adult female from Guatemala.....                                             | 123.5 | 132.5 | 16      | 14.5    | 13.5                |
| Nine adult females from Costa Rica.....                                          | 125.4 | 145.2 | 16.4    | 14.1    | 12.8                |
| Two adult females from western Panamá.....                                       | 131   | 152.7 | 17      | 14      | 12.7                |



- SUMICHRAST, Mem. Bost. Soc. N. H., i, 1869, 560 (hot region, Vera Cruz); La Naturaleza, v, 1881, 239 (Uvero, Vera Cruz).—SALVIN, Proc. Zool. Soc. Lond., 1870, 202 (Volcán de Chiriquí, Panamá).—BOUCARD, Proc. Zool. Soc. Lond., 1878, 48 (Cerro de la Candelaria and Navarro de Cartago, Costa Rica); 1883, 454 (Izamal and Tizimín, Yucatan); Liste Ois. récol. Guat., 1878, 25.—ZELEDÓN, Proc. U. S. Nat. Mus., viii, 1885, 109 (Costa Rica); Anal. Mus. Nac. Costa Rica, i, 1887, 120 (Turrialba and Navarro de Cartago, Costa Rica).—GRANT, Cat. Birds Brit. Mus., xvii, 1892, 452.—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1896, 491.—CHAPMAN, Bull. Am. Mus. N. H., x, 1898, 34 (Jalapa).—BANGS, Proc. New Engl. Zool. Club, iii, 1902, 31 (Boquete, Panamá, 4,000–7,000 ft.).—COLE, Bull. Mus. Comp. Zool., i, 1906, 128 (Chichen-Itza, Yucatan).—DEARBORN, Pub. 125, Field Mus. N. H., 1907, 88 (Patulúl, Guatemala).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 557 (Costa Rican range).—FERRY, Pub. 146, Field Mus. N. H., orn. ser., i, no. 6, 1910, 265 (Guayabo, Costa Rica; habits).
- T[rogon] puella* GRAY, Gen. Birds, i, 1845, 70.—BONAPARTE, Consp. Av., i, 1850, 149.—CABANIS and HEINE, Mus. Hein., iv, 1863, 172 (Jalapa).—SCLATER, Proc. Zool. Soc. Lond., 1864, 176 (near City of Mexico).—RIDGWAY, Man. N. Am. Birds, 1887, 277.
- [Trogon] puella* GRAY, Hand-list, i, 1869, 82, no. 972.—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 104.—SHARPE, Hand-list, ii, 1900, 148, part (includes *T. aurantiventris* and *T. a. underwoodi*).
- [Trogonurus] puella* BONAPARTE, Consp. Voluc. Zygod., 1854, 14.
- Trogon xalapensis* DU BUS, Esquiss. Orn., i, 1845, pl. 2 (Jalapa, Vera Cruz).—LAFRESNAYE, Rev. Zool., x, 1847, 180.
- T[rogon] xalapensis* GRAY, Gen. Birds, iii, 1849, App., p. 4.—BONAPARTE, Consp. Av., i, 1850, 150.
- [Trogonurus] xalapensis* BONAPARTE, Consp. Voluc. Zygod., 1854, 14.
- Trogon luciani* "Less[on] ex Bonap[arte]" BONAPARTE, Compt. Rend., xlii, 1856, 955, footnote. (*Nomen nudum?*)

### TROGONURUS AURANTHIVENTRIS AURANTHIVENTRIS (Gould).

#### ORANGE-BELLIED TROGON.

Similar to *T. puella* but color of under parts orange (between cadmium orange and saturn red).

Above bright metallic green or golden green, including middle rectrices, which are abruptly tipped with black, the second and third pairs with the inner web wholly black; remaining rectrices black, rather narrowly tipped with white (the white terminal bar about 2–5 mm. wide), the remaining portion narrowly barred with white, the white bars several times narrower than the black interspaces; on inner web of third rectrix (from outside) the bars confined to subterminal portion, except along edge, on that of second rectrix confined to about terminal half and edge; anterior lesser wing-coverts bright metallic green, like back, etc., the rest black narrowly barred with white; greater coverts and secondaries black finely vermiculated with white; primaries black, edged with white on outer web, except on shorter proximal and outermost quills; loreal, orbital, auricular, and malar regions, chin, and throat, black; chest bright metallic green or golden green, margined posteriorly by a band of white across upper breast; rest of under parts pure orange (between cadmium orange and saturn red,

but nearest the former), more or less paler on under tail-coverts, the thighs black; bill yellow; feet brownish or horn color (in dried skins); length (skins), 248–267 (256); wing, 122.5–128 (125.6); tail, 132.5–157.5 (142.4); culmen, 15.5–18 (16.8); tarsus, 14–15 (14.4); inner anterior toe, 12.5–13.5 (13).<sup>a</sup>

*Adult female*.—Above plain brown (nearest raw umber or between that and mummy brown), darker (nearly prouts brown or mummy brown) on pileum, slightly paler and more tawny brown on lower rump and upper tail-coverts; middle rectrices clear chestnut, narrowly and sharply tipped with black, the inner web of second and third pairs (from middle) wholly dark brown (nearly seal brown); anterior lesser wing-coverts plain brown, like pileum, the remaining coverts and secondaries paler brown finely vermiculated or freckled with blackish; primaries dull slate-blackish, the longer conspicuously edged on outer web with white, the shorter proximal quills with exterior portion of outer web pale brownish minutely freckled with dusky; loreal and postocular regions dusky; a white orbital ring, broadest behind eye, broadly interrupted on both upper and lower eyelids; suborbital, auricular, and malar regions, chin, and throat dusky brown; chest tawny brown, like color of back, etc.; rest of under parts as in adult male, but the orange averaging paler; maxilla blackish or dusky, the lower basal portion, together with mandible, yellowish; feet as in adult male; length (skins), 247–256 (251); wing, 120–124 (122.7); tail, 135–144 (138.2); culmen, 15.5–16.5 (16); tarsus, 14–14.5 (14.3); inner anterior toe, 12–12.5 (12.2).<sup>b</sup>

Western Panamá (near David, Chiriquí; Santa Fé de Veragua; Calovévora; Castillo; Cordillera de Tolé; Boquete, 3,000–6,000 feet) and southern and central Costa Rica (Dota; Cartago; Volcán de Irazú).

*Trogon aurantiiventris* GOULD, Proc. Zool. Soc. Lond., xxiv, 1856, 107 (near David, Veragua, w. Panamá; coll. J. Gould); Ann. and Mag. N. H., 2d ser., xix, 1857, 110; Mon. Trog., ed. 2, 1858, pl. 12, and text.—SCLATER, Proc. Zool. Soc. Lond., 1856, 139 (above David).—SALVIN, Proc. Zool. Soc. Lond., 1867, 151 (Santa Fé, and Cordillera de Tolé, Veragua; David); 1870, 202 (Calovévora and Castillo, Veragua).—RIDGWAY, Proc. U. S. Nat. Mus., xiv, 1891, 478 (Volcán de Irazú and Cartago, Costa Rica; crit.).—BANGS, Proc. New Engl. Zool. Club, iii, 1902, 31 (Boquete, Chiriquí, Panamá, 3,000–6,000 ft.; crit.).

[*Trogon*] *aurantiiventris* GRAY, Hand-list, ii, 1869, 83, no. 984, part (Veragua).—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 104, part (Veragua).

*Trogon auranteiventris* GRANT, Cat. Birds Brit. Mus., xvii, 1892, 454, part (Chiriquí; Calovévora, Santa Fé, and Cordillera de Tolé, Veragua).

*P[othinus] aurantiiventer* CABANIS and HEINE, Mus. Hein., iv, 1863, 182, part (David, Chiriquí).

*Trogon puella* (not of Gould) SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1896, 491 (orange-bellied specimens from Panamá).

[*Trogon*] *puella* SHARPE, Hand-list, ii, 1900, 148, part (Panamá).

<sup>a</sup> Ten specimens.

<sup>b</sup> Three specimens.

## TROGONURUS AURANTIIVENTRIS UNDERWOODI (Bangs).

## UNDERWOOD'S TROGON.

Similar to *T. a. aurantiiventris* and *T. puella* but posterior under parts orange-red (flame scarlet to salmon-pink) instead of orange (*aurantiiventris*) or geranium red (*T. puella*).

*Adult male*.—Length (skins), 226–255 (239); wing, 122.5–131 (127.1); tail, 130–144 (136.9); culmen, 17–18 (17.4); tarsus, 14–16 (15); inner anterior toe, 12–14 (13.1).<sup>a</sup>

*Adult female*.—Length (skin), 242;<sup>b</sup> wing, 126–133 (128.7); tail, 135–143 (138.9); culmen, 16–17.5 (16.5); tarsus, 14–15 (14.4) inner anterior toe, 11.5–13 (12.5).<sup>c</sup>

Northwestern Costa Rica (Barranca; Cerro Santa Maria; Tenório; La Hondura; Volcán de Miravalles). (Possibly also northward to Vera Cruz, Mexico; see references in synonymy.)

(?) *Trogon sallaei* BONAPARTE, Compt. Rend., xlii, 1856, 955 (Orizaba, Vera Cruz).

(?) *P[othinus] sallaei* CABANIS and HEINE, Mus. Hein., iv, 1863, 183 (Mexico; crit.).

(?) *Trogon aurantiiventris* (not of Gould) SCLATER, Proc. Zool. Soc. Lond., 1856, 286 (Córdova, Vera Cruz).—SALVIN, Ibis, 1866, 194 (Choctúm, Vera Paz, Guatemala).

(?) *Trogon auranteiventris* GRANT, Cat. Birds Brit. Mus., xvii, 1892, 454, part (Choctúm).

(?) [*Trogon*] *aurantiiventris* GRAY, Hand-list, i, 1869, 83, no. 984, part (Mexico).—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 104, part (Mexico).

(?) *P[othinus] aurantiiventris* CABANIS and HEINE, Mus. Hein., iv, 1863, 182, part (Córdova).

*Trogon aurantiiventris* (not of Gould) LAWRENCE, Ann. Lyc. N. Y., ix, 1868, 118 (Barranca, n. w. Costa Rica).—FRANTZIUS, Journ. für Orn., 1869, 312 (Costa Rica).—ZELEDÓN, Proc. U. S. Nat. Mus., viii, 1885, 109 (Costa Rica); Anal. Mus. Nac. Costa Rica, i, 1887, 120 (Barranca).—UNDERWOOD, Ibis, 1896, 444 (Volcán de Miravalles, Costa Rica).

[*Trogon*] *aurantiiventris* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 104, part. *Trogon auranteiventris* GRANT, Cat. Birds Brit. Mus., xvii, 1892, 454, part (Barranca).

*Trogon puella* (not of Gould) SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1896, 491, part (Barranca).

[*Trogon*] *puella* SHARPE, Hand-list, ii, 1900, 148, part.

*Trogon underwoodi* BANGS, Proc. New Engl. Zool. Club, iv, March 19, 1908, 24 (Volcán de Miravalles, n. w. Costa Rica; coll. E. A. and O. Bangs); Proc. Biol. Soc. Wash., xxii, 1909, 30 (Tenório and Cerro Santa Maria, n. w. Costa Rica; crit.).

*Trogon aurantiiventris underwoodi* CARRIKER, Ann. Carnegie Mus., vi, "August 29"=Sept. 7, 1910, 558 (highlands of n. w. Costa Rica; crit.).

<sup>a</sup> Eight specimens.

<sup>b</sup> One specimen.

<sup>c</sup> Four specimens.



## TROGONURUS CURUCUI TENELLUS (Cabanis).

## GRACEFUL TROGON.

*Adult male*.—Pileum, hindneck, back, scapulars, lesser wing-coverts, rump, upper tail-coverts, and chest bright metallic green, the back, etc., usually slightly more golden green, the upper tail-coverts usually slightly more bluish green; loreal, orbital, auricular, and malar regions, chin, and throat black; middle pair of rectrices metallic bluish green or greenish blue, broadly and abruptly tipped with black, the two adjoining pairs with outer webs similar, but inner webs blackish; three lateral pairs of rectrices black broadly tipped with white, the subterminal portion of inner web and greater part of outer web broadly barred with white; middle and greater wing-coverts and outer webs of secondaries finely vermiculated with black and white; primaries black, edged (except outermost and shorter proximal quills) with white, this somewhat broken on terminal portion; under parts posterior to chest pure orange-yellow (between cadmium and chrome yellow), the anterior margin paler or somewhat intermixed with white, forming an indistinct band next to green of chest; thighs sooty blackish; bill dull yellowish or yellowish gray in dried skins, light apple green<sup>a</sup> or chromium green<sup>b</sup> in life; naked eyelids glaucous<sup>a</sup> or blue;<sup>b</sup> iris dark brown; feet gray<sup>b</sup> or plumbeous;<sup>b</sup> length (skins), 213–254 (224); wing, 105–117.5 (110.4); tail, 124–144 (134.1); culmen, 16–17.5 (16.5); tarsus, 12–14.5 (12.7); inner anterior toe, 12–14.5 (12.8).<sup>c</sup>

*Adult female*.—Pileum, auricular region, hindneck, back, scapulars, lesser wing-coverts, rump, and upper tail-coverts plain brown (nearly raw umber), the color slightly deeper (nearly mummy brown or prouts brown) on pileum, paler and grayer (nearly isabella color) on rump and upper tail-coverts, the longer of the latter sometimes more rufescent; middle pair of rectrices deep cinnamon-rufous or chestnut, rather narrowly tipped with black, this preceded by an indistinct subterminal narrow band of cinnamon-buffy; next two pairs with outer web similar but inner web blackish brown; three lateral pairs extensively white terminally and on greater part of outer web, black basally, the white portion (except an immaculate terminal area) broadly barred with black; middle and greater wing-coverts and secondaries much paler brown than back, etc., finely vermiculated with dusky; a white orbital ring, interrupted on lower eyelid, broadest behind eye, where margined posteriorly by a black bar; suborbital region and posterior portion of lores grayish dusky;

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<sup>a</sup> Fresh colors of specimens shot by the writer in Costa Rica.

<sup>b</sup> Nutting.

<sup>c</sup> Twenty-one specimens.

malar region, chin, throat, and chest plain brown (like color of rump); rest of underparts as in adult male, but the yellow usually less intense, and sides of breast washed or intermixed with brownish gray; maxilla blackish, the lower basal portion and mandible light grayish yellowish (in dried skins), the whole maxilla also sometimes yellowish; length (skins), 227-263 (242); wing, 105.5-115.5 (111.6); tail, 129.5-152 (138.4); culmen, 15.5-17.5 (17.2); tarsus, 12-14 (12.8); inner anterior toe, 12-14 (13.2).<sup>a</sup>

*Immature male*.—Intermediate in coloration between the adult male and adult female, the pileum, back, rump, upper tail-coverts, etc., being bright metallic golden green, as in the former, but sides of head, throat, and chest, together with larger wing-coverts and secondaries, brown, as in the latter; tail as in adult female but six middle rectrices partly metallic green basally, the middle pair without distinct black tip. (Older specimens have more or less of metallic green on chest, chin and throat black, and wing-coverts and secondaries as in adult male.)

*Young male (nestling)*.—Pileum, hindneck, back, and scapulars warm cinnamon or russet, passing on rump and upper tail-coverts, into cinnamon-rufous, the middle rectrices chestnut abruptly tipped with black; wing-coverts and secondaries light buffy brown or wood brown, vermiculated with grayish dusky, most of the feathers with a very large roundish or subcordate spot of buff, deeper buff on lesser coverts, paler on tertials, these spots margined with a dusky line; remiges, primary coverts, alula, and lateral rectrices as in adult female; an interrupted white orbital ring, lores grayish dusky; chin, throat, and chest uniform cinnamon-brown or russet; rest of underparts light tawny, deeper on breast, paler posteriorly and on upper margin of breast (where somewhat intermixed with whitish tawny).

Panamá (Lion Hill; Chepo; Panamá; Chitra; Calovévora; Bugaba; Divala; Santiago de Verágua; Santa Fé de Verágua; Cordillera de

<sup>a</sup> Nineteen specimens.

| Locality.                                                    | Wing. | Tail. | Culmen. | Tarsus. | Inner anterior toe. |
|--------------------------------------------------------------|-------|-------|---------|---------|---------------------|
| MALES.                                                       |       |       |         |         |                     |
| Ten adult males from Panamá.....                             | 107.9 | 131.5 | 16.6    | 12.8    | 12.7                |
| Ten adult males from Costa Rica.....                         | 112.7 | 136.5 | 16.4    | 12.7    | 12.9                |
| One adult male from Nicaragua.....                           | 111.5 | 136   | 16.5    | 12.5    | 13                  |
| FEMALES.                                                     |       |       |         |         |                     |
| Six adult females from Panamá.....                           | 110.3 | 139.7 | 16.5    | 12.6    | 12.9                |
| Ten adult females from Costa Rica.....                       | 112.3 | 137.7 | 16.6    | 13      | 13.2                |
| Three adult females from Nicaragua (2) and Honduras (1)..... | 111.8 | 138   | 17.2    | 12.7    | 13.7                |

Tolé; Volcán de Chiriquí) and northward through Costa Rica (Angostura; Guaitíl; Pacuare; Barranca; Las Trojas; Pozo del Rio Grande; Pozo Azul de Pirris; Paso Real; Boruca; Tenório; Bebedero; Lagarto; Guayabál; Bonilla; Juan Viñas; Rio Sicsola, Talamanca; Talamanca; Orosí; La Vijagua) and Nicaragua (Greytown; Rio Escondido; San Emilis, Lake Nicaragua; La Libertad and Santo Domingo, Chontales) to southeastern Honduras (Rio Segovia).

*Trogon aurantiiventris* (not of Gould) LAWRENCE, Ann. Lyc. N. Y., vii, 1862, 290 (Lion Hill, Panamá).

*Trogon tenellus* CABANIS, Journ. für Orn., May, 1862, 173 (Costa Rica; coll. Berlin Mus.).—LAWRENCE, Ann. Lyc. N. Y., viii, 1863, 481 (Lion Hill); ix, 1868, 119 (Angostura, Guaitíl, Pacuare, and Barranca, Costa Rica).—FRANTZIUS, Journ. für Orn., 1869, 312 (Costa Rica).—SALVIN, Ibis, 1872, 321.—GOULD, Mon. Trog., ed. 2, 1875, pl. 15 and text.

[*Trogon*] *tenellus* GRAY, Hand-list, i, 1869, 83, no. 983.

*P[othinus] tenellus* CABANIS and HEINE, Mus. Hein., iv, 1863, 181 (Costa Rica; crit.).

[*Trogon atricollis*] Race B. (*Trogon tenellus*) GRANT, Cat. Birds Brit. Mus., xvii, 1892, 456, 458 (Chontales, Nicaragua; Barranca and Angostura, Costa Rica; Bugaba, Cordillera de Tolé, Santiago, Santa Fé de Veragua, Chitra, Calovévora, Panamá, and Chepo, Panamá).

*Trogon atricollis tenellus* RICHMOND, Proc. U. S. Nat. Mus., xvi, 1893, 513 (Rio Escondido, Nicaragua).—BANGS, Auk, xviii, 1901, 360 (Divala, Panamá); xxiv, 1907, 294 (Boruca and Pozo del Rio Grande, Costa Rica; descr. young).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 559 (Costa Rica; habits; descr. nest and eggs).

*Trogon atricollis tenuellus* BANGS, Proc. New Engl. Zool. Club, ii, 1900, 19 (Loma del León, i. e. Lion Hill, Panamá).

*Trogon atricollis* (not of Vieillot) SCLATER and SALVIN, Proc. Zool. Soc. Lond., 1864, 364 (Lion Hill, Panamá).—SALVIN, Proc. Zool. Soc. Lond., 1867, 151 (Cordillera de Tolé, Santiago, and Santa Fé de Veragua, Panamá; crit.); 1870, 202 (Volcán de Chiriquí, Bugaba, Chitra, and Calovévora, Panamá); Ibis, 1872, 313, 321 (Chontales, Nicaragua; crit.).—ZELEDÓN, Proc. U. S. Nat. Mus., viii, 1885, 109 (Costa Rica); Anal. Mus. Nac. Costa Rica, i, 1887, 120 (Las Trojas, Angostura, and Pacuare, Costa Rica).—RIDGWAY, Proc. U. S. Nat. Mus., x, 1887, 591 (Rio Segovia, s. e. Honduras).—CHERRIE, Expl. Zool. Merid. Costa Rica, 1893, 47 (Lagarto and Boruca, Costa Rica).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1896, 493, part (Central American localities and references).—UNDERWOOD, Ibis, 1896, 444 (Volcán de Miravalles, Costa Rica).

[*Trogon*] *atricollis* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 104, part (Central America).—SHARPE, Hand-list, ii, 1900, 148, part (Honduras; Nicaragua; Costa Rica; Panamá).

(?) *Trogon chrysomelas* <sup>a</sup> RICHMOND, Proc. U. S. Nat. Mus., xvi, no. 947, Oct. 4,

<sup>a</sup> Description of the type (and only known specimen):

*Adult male*.—Pileum, sides of head, chin, and throat uniform sooty black, the chest similar but more sooty; back, scapulars, lesser wing-coverts, rump, upper tail-coverts, and middle rectrices sooty grayish brown (nearly clove brown), the last broadly and sharply tipped with black; three lateral pairs of rectrices broadly tipped with white, the remaining portion very regularly barred with black and white (the black and white bars of nearly equal width and about 2-3 mm. wide), except basal (concealed)



1893, 513 (Rio Escondido, Nicaragua; coll. U. S. Nat. Mus.; = abnormally colored adult male?).—SALVIN and GODMAN, Biol. Centr.-Am., Aves, ii, 1896, 501.

[*Trogon*] *chrysomelas* SHARPE, Hand-list, ii, 1900, 149.

### Genus CHRYSOTROGON Ridgway.<sup>a</sup>

*Microtrogon* (not of Bertoni, 1901 <sup>b</sup>) GOELDI, Bol. Mus. Goeldi, v, no. 1, Feb., 1908, 92, 93, 94, 95. (Type, *Trogon ramoniana* Deville and Des Murs.).—SNETHLAGE, Bol. Mus. Goeldi, v, no. 1, Feb., 1908, 62, in text.<sup>c</sup>

Small Trogons, resembling *Trogonurus*, but differing in having the tarsus densely feathered to base of toes, tail relatively shorter, and nestling resembling adults in coloration.

Bill stout, its depth at nostrils equal to its width at same point, the culmen strongly arched, indistinctly ridged; gonys about as long as mandibular rami, slightly to moderately convex, strongly ascending terminally; interramal space broader at base than long; tomia distinctly serrate, especially on mandible, the tip of which forms a short ascending point. Nostril roundish, margined above and behind by membrane, mostly concealed by strong, antrorse, decurved latero-frontal bristles. Eyelids naked, forming a rather broad orbital ring. Feathers of malar apex and chin bristly, antrorse, the latter strongly recurved; seventh and sixth primaries longest, the eighth a little shorter, the tenth (outermost) about half as long as ninth; tail about as long as wing (sometimes shorter), graduated for a little more than one-third its length, the rectrices truncate (the lateral ones obliquely so) at tip, the outermost moderately bowed basally. Tarsus about

portion of inner web of outermost rectrix and basal half or more of inner web of next two; middle and greater wing-coverts and secondaries delicately vermiculated with black and white; rest of wing slate-blackish, the longer primaries edged with white; under parts, posterior to chest, rich, pure orange-yellow (between lemon and cadmium, but nearer to latter), margined anteriorly by a band of white across upper breast (next to sooty color of chest), the feathers of tibia and upper portion of tarsus sooty black, tipped with yellowish white; bill (in dried skin) grayish horn color, with tomia and terminal half of culmen dull yellowish; feet horn color, in dried skin; length (skin), 238; wing, 110.5; tail, 140; culmen, 17; tarsus, 13; inner anterior toe, 14. (No. 127338, coll. U. S. Nat. Mus., Rio Escondido, Nicaragua, September 23, 1892; Charles W. Richmond.)

This bird agrees so perfectly in measurements, pattern of coloration of lateral rectrices, and color of under parts (posterior to the chest), that, in spite of the utter absence of metallic coloring, I am now disposed to consider it an abnormal adult male of *T. curucui tenellus*. The adult female described by Dr. Richmond as that of *T. chrysomelas* is unquestionably referable to *Chrysotrogon caligatus*.

<sup>a</sup> New genus. Type, *Trogon caligatus* Gould. From *χρυσός*, gold + *Trogon* (*τρώγω*, I gnaw, I eat).

<sup>b</sup> Aves Nuevas del Paraguay, 1901, 41. (Type, *M. fulvescens* Bertoni = *Bucco* [*Nonnula*] *rubecula* Spix.

<sup>c</sup> Has anteriority over publication of same name by Goeldi, but not intended as new.

as long as middle toe, densely feathered for entire length; anterior toes united for basal and part of second phalanx.

*Coloration*.—Adult males with head and neck black, chest metallic bluish green to violet-blue, back bright metallic green, upper tail-coverts and middle rectrices metallic bluish green or greenish blue (the latter broadly tipped with black), lateral rectrices barred with black and white (except a terminal area of immaculate white), wing-coverts and secondaries minutely vermiculated with black and white, and under parts posterior to chest rich orange-yellow; adult females with slate color replacing all the metallic colors, as well as the black of head and neck, the wing-coverts and secondaries narrowly barred with white, and inner web of lateral rectrices wholly blackish except the narrow white tip; young male similar to the adult male, but chest, back, and middle rectrices dark sooty brown or sooty slate; young female similar to the adult female, but the slate color darker and more sooty.

*Range*.—Southern Mexico to Ecuador, Amazon Valley, Guiana, and Trinidad. (Three or four species.<sup>a</sup>)

KEY TO THE SPECIES AND SUBSPECIES OF *CHRYSOTROGON*.

- a. Back, scapulars, rump, upper tail-coverts and middle rectrices bright metallic green and blue or greenish blue; no white orbital ring; wing-coverts and secondaries minutely vermiculated or freckled with white or gray, or else uniform slate-black. (*Adult males*.)
- b. Lower part of tarsus naked; bill broader basally, the interramal space relatively larger and broader; pileum (except forehead) metallic blue or violet.
- c. Culmen rounded, or at least not distinctly ridged; wing-coverts distinctly (though minutely) freckled with pale gray. (Cayenne and Trinidad to Caribbean slope of Colombia.)

*Chrysotrogon violaceus*, adult male (extralimital).<sup>b</sup>

- cc. Culmen distinctly ridged; wing-coverts not distinctly if at all freckled with gray. (*Chrysotrogon ramonianus*.)

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<sup>a</sup> Although *Trogon meridionalis* Swainson and *T. ramoniana* Deville and Des Murs differ from the type of *Chrysotrogon* in having the extreme lower part of the tarsus bare, and the plumage of their young is unknown, the adults resemble *C. caligatus* so closely in coloration that I have little doubt they belong in the same genus.

<sup>b</sup> [*Trogon*] *violaceus* Gmelin, Syst. Nat., i, pt. 1, 1788, 404 (based on *Lanius capite*, etc., Koelreuter, Nov. Act. Petrop., ii, 436, pl. 16, fig. 8; *Couroucou à chaperon violet* Buffon, Hist. Nat. Ois., vi, 294; *Violet-headed Curucui* Latham, Synopsis Birds, i, pt. 2, 491).—[*Trogon*] *violaceus* Hellmayr, Abh. K. Bayer. Akad. Wiss. München, ii, Kl., xxii, Bd. iii, 1906, 596 (crit.).—*A[ganus] violaceus* Cabanis and Heine, Mus. Hein., iv, Feb., 1863, 190 (Cayenne; Guiana; Trinidad).—*Trogon meridionalis* Swainson, Anim. in Menag., pt. iii, Jan. 1, 1838, 332 ("Bahamas and other neighboring islands;" coll. W. Swainson); Gould, Mon. Trog., ed. 1, 1838, pl. 9 and text; ed. 2, 1875, pl. 17 and text; Grant, Cat. Birds Brit. Mus., xvii, 1892, 467.—*A[ganus] caligatus* (not *Trogon caligatus* Gould) Cabanis and Heine, Mus. Hein., iv, Feb., 1863, 189 (Cartagena, Colombia).

- d. Wing-coverts and secondaries uniform black or with very minute freckling showing on very close examination; bill larger, with culmen less sharply ridged. (Eastern Ecuador and Peru.)

*Chrysotrogon ramonianus ramonianus*, adult male (extralimital).<sup>a</sup>

- dd. Wing-coverts and secondaries obviously (though minutely) vermiculated or freckled with grayish; bill smaller, with culmen compressed and sharply ridged. (Lower Amazon Valley; Bahia?)

*Chrysotrogon ramonianus crissalis*?, adult male (extralimital).<sup>b</sup>

- bb. Lower part of tarsus feathered (to base of toes); bill narrower basally, the interramal space smaller and narrower; pileum black (only the hindneck glossed with blue or violet). (Southern Mexico to western Ecuador.)

*Chrysotrogon caligatus*, adult male (p. 786).

- aa. Back, scapulars, rump, upper tail-coverts, middle rectrices, and chest plain slate color or blackish slate (like head and neck); interrupted orbital ring and narrow cross-lines on wing-coverts and secondaries white. (*Adult females*.)

- b. Lower portion of tarsus naked.

- c. Bill larger, the culmen not distinctly ridged.

*Chrysotrogon violaceus*, adult female (extralimital).<sup>c</sup>

- cc. Bill smaller, the culmen sharply ridged.

*Chrysotrogon ramonianus crissalis*?, adult female (extralimital).<sup>c</sup>

- bb. Lower part of tarsus feathered (to base of toes).

*Chrysotrogon caligatus*, adult female (p. 787).

### CHRYSOTROGON CALIGATUS (Gould).

#### GARTERED TROGON.

*Adult male*.—Head and neck black, sometimes passing into metallic blue or violet-blue on lower hindneck;<sup>d</sup> back, scapulars, upper rump, and anterior lesser wing-coverts bright metallic green or golden green, passing into pure metallic green, bluish green, or nearly greenish blue on lower rump, upper tail-coverts, and middle pair of rectrices, the latter abruptly tipped with black, the next two pairs of rectrices with outer web similar but inner web wholly uniform black; three lateral pairs of rectrices broadly tipped with white, the remaining

<sup>a</sup> *Trogon ramoniana* Deville and Des Murs, Rev. Zool., 1849, 331 (Sarayu, e. Ecuador); Des Murs, in Castelnau's Expéd. l'Amér. du Sud, Ois., 1855, 33, pl. 11, fig. 2.—*Trogon ramonianus* Bonaparte, Compt. Rend., xlii, 1856, 955, note 1; Gould, Mon. Trog., ed. 2, 1858, pl. 18 and text; Grant, Cat. Birds Brit. Mus., xvii, 1892, 468.—*A[ganus] ramonianus* Cabanis and Heine, Mus. Hein., iv, Feb., 1863, 194 (Sarayu and Pampas del Sacramento).

<sup>b</sup> (?) *A[ganus] crissalis* Cabanis and Heine, Mus. Hein., iv, Feb., 1863, 190 (Bahia, c. Brazil; coll. Heine Mus.).—*Trogon ramonianus* (not *T. ramoniana* Deville and Des Murs) Goeldi, Bol. Mus. Goeldi, v, 1908, 92 (Pará, etc., Lower Amazon).

I have not seen a specimen from Bahia, and assume that the bird from that district may be the same as the Lower Amazon form. It certainly can not be either true *ramonianus* or *C. violaceus*. But the Bahia bird may be a different form, in which case I propose for the Pará bird the name *Chrysotrogon ramonianus goeldii*. (Type, no. 105,232, coll. U. S. Nat. Mus., Pará, Brazil, March 6, 1881; E. M. Brigham.)

<sup>c</sup> With only one specimen of the Lower Amazon form, and none of *C. ramonianus ramonianus*, I am not able to more satisfactorily characterize the females of these two forms and *C. violaceus*.

<sup>d</sup> More rarely this metallic coloring extends over greater part of the hindneck.



portion black, for the most part barred with white, the outermost rectrix with the outer web barred for whole length (but basally the white bars not reaching to shaft), the inner web also barred for greater part, but the white bars becoming gradually narrower and shorter (from edge of web) proximally, the third rectrix (from outside) with outer web barred for more than half its length but the inner web with not more than one or two complete bars (often with none at all)—the white bars continuous (involving the shaft) on the subterminal portion of two outer rectrices and there nearly (sometimes quite) equal in width to the black interspaces; wing-coverts and secondaries minutely vermiculated with black and white; primaries dull black, the longer ones edged with white for basal half or more; chest metallic bluish green, blue, or violet-blue, rarely black, glossed, more or less, with metallic bluish green or blue; rest of under parts rich pure orange-yellow or yellowish orange (cadmium yellow to orange),<sup>a</sup> paler, sometimes slightly intermixed with whitish, along anterior margin (next to metallic blue of chest), the outer portion of sides and flanks gray, tinged or washed with orange-yellow, the thighs and tarsal feathers black; bill pale yellowish or grayish in dried skins, pale olive-gray or dull glaucous <sup>b</sup> or ashy blue <sup>c</sup> in life; naked orbital ring orange-yellow,<sup>b</sup> like color of abdomen; iris dark brown;<sup>b</sup> feet gray <sup>b</sup> or plumbeous;<sup>c</sup> length (skins), 214–254 (229); wing, 110–134 (121.1); tail, 112–135 (122.6); culmen, 15–18.5 (16.6); tarsus, 12.5–15 (13.4); inner anterior toe, 12–15 (13.5).<sup>d</sup>

*Adult female*.—Upper parts (except wings) plain slate color, darker (blackish slate) on pileum, the middle rectrices abruptly and rather broadly tipped with black; a broad white orbital ring, interrupted on upper and lower eyelids; wings black, or slate-black, the wing-coverts and secondaries narrowly barred with white transverse lines (these several times narrower than the broad black interspaces), the longer primaries edged with white; three lateral rectrices with inner web black tipped with white, the latter extending, wedge-like, for a greater or less distance next to shaft, the outer web broadly barred with white (for nearly entire length of outermost, for about one-third the length of third rectrix); sides of head and neck, chin, throat, and chest plain slate color or blackish slate; outer portion of sides and flanks lighter slate color or slate-gray, tinged with orange-yellow; tibial and tarsal feathers black; rest of under parts orange-yellow, paler (usually somewhat intermixed with white) along anterior margin; bill light grayish or buffy in dried skins, the maxilla sometimes partly blackish; iris dark brown; feet dusky horn color or brownish in dried skins, grayish in life; length (skins), 213–247 (231);

<sup>a</sup> Of the author's "Nomenclature of Colors."

<sup>b</sup> Fresh colors of specimens shot by the writer in Costa Rica.

<sup>c</sup> According to Sumichrast.

<sup>d</sup> Fifty-three specimens.

wing, 113–130.5 (121.5); tail, 114.5–135.5 (126.1); culmen, 15–17.5 (16.7); tarsus, 12.5–15.5 (13.6); inner anterior toe, 12–14 (13.2).<sup>a</sup>

*Immature male*.—Similar to the adult male but lateral rectrices less regularly barred (the pattern essentially intermediate between that of the adult male and that of adult female), wing-coverts more coarsely vermiculated, and chest with greater or less intermixture of dull slate color.

*Young male (nestling)*.—Similar to the adult female, but the general slate color darker and more sooty, pileum black, and with wing-coverts and secondaries more irregularly barred with white.

Southeastern Mexico, in States of Tamaulipas (Tampico), Vera Cruz (Córdoba; Orizaba; Jalapa; Omealca; Uvero; Motzorongo; Colipa; Misantla; Los Cerillos; Atoyác; Playa Vicente; Valle Real; Pasa Nueva), Puebla (Metlaltoyuca), Mexico ("near City of Mexico"), Oaxaca (Guichicovi; Choapám; Cacoprieto; Chimalapa; Santa Efigénia), Tabasco (Teapa), Chiapas (Huehuetán; Palenque; Tapachula), Campeche (Yohaltán) and Yucatan (La Vega; Shkolak; Peto; Izamál; Calotmúl; Tunkas; Chichen-Itza) and southward through Guatemala (Choctúm; Yaxcamnál; Chiséc; Telemán; Tolimán; Dueñas; Volcán de Fuego; Alotenango; Retalhuleu; Mazatenango; Santo Tomas; Gualán, Zacapa; Patulúl, Sololá; Naranjo), Salvador (Volcán de San Miguél), Honduras (Omoa; Yaruca; Copán), Nicaragua (Matagalpa; San Rafael del Norte; Volcán de Chinandega; San Carlos; León; La Libertad, Chontales; Sucuyá; Rio Escondido), Costa Rica (La Palma de Nicoya; San Mateo; Turrialba; Birris de Cartago; Naranjo de Cartago; Cartago; San Juan; Alajuela; Las Trojas; Jiménez; Guaitil; San José; Angostura; Turrialba; Juan Viñas; Bonilla; Guayabo; Pigres; Boruca; Barranca de Boruca;

<sup>a</sup> Thirty-seven specimens.

| Locality.                                                   | Wing. | Tail. | Culmen. | Tarsus. | Inner anterior toe. |
|-------------------------------------------------------------|-------|-------|---------|---------|---------------------|
| MALES.                                                      |       |       |         |         |                     |
| Six adult males from Vera Cruz (5) and Puebla (1).....      | 126.4 | 129.7 | 16.8    | 14.1    | 14.1                |
| Five adult males from Oaxaca (4) and Tabasco (1).....       | 123.7 | 125.1 | 16.8    | 13.5    | 13.5                |
| Nine adult males from Yucatán.....                          | 124.3 | 124.8 | 16.7    | 13.6    | 13.6                |
| Five adult males from Chiapas (2) and Guatemala (3).....    | 122.2 | 123.6 | 16.4    | 13.7    | 13.5                |
| Four adult males from Honduras.....                         | 124.2 | 125.5 | 16      | 14      | 13.9                |
| Ten adult males from Costa Rica.....                        | 119.2 | 119   | 16.5    | 13.4    | 13.7                |
| Ten adult males from Panamá.....                            | 115.7 | 118.3 | 16.6    | 12.9    | 13                  |
| Three adult males from Colombia.....                        | 115.7 | 123.2 | 16.3    | 12.2    | 12.7                |
| One adult male from western Ecuador (Guayaquil).....        | 118   | 118   | 16      | 13      | 12                  |
| FEMALES.                                                    |       |       |         |         |                     |
| Five adult females from Vera Cruz.....                      | 125.1 | 130.6 | 16.4    | 13.8    | 13.5                |
| Three adult females from Oaxaca.....                        | 124.3 | 125.7 | 16.5    | 13.7    | 13.3                |
| Four adult females from Yucatán.....                        | 123.9 | 131.7 | 15.9    | 13.7    | 13.7                |
| Seven adult females from Chiapas (1) and Guatemala (6)..... | 123.9 | 127.3 | 16.1    | 14.2    | 13.1                |
| Two adult females from Honduras.....                        | 128.2 | 131.7 | 16.7    | 14.2    | 13.7                |
| Ten adult females from Costa Rica.....                      | 119.9 | 123.7 | 16.3    | 13.4    | 13                  |
| Five adult females from eastern Panamá.....                 | 114.6 | 120.1 | 16      | 12.6    | 12.6                |
| One adult female from western Ecuador (Guayaquil).....      | 117   | 120   | 15.5    | 12.5    | 13                  |

Barranca de Punta Arenas; Lagarto; Bolsón; Tenório; Volcán de Miravalles; Guápiles; Guácimo), Panamá (Calovévora; Castillo; Santiago de Verágua; Santa Fé; Divala; Lion Hill; San Pablo; Paraiso; Panamá; Sabana de Panamá; Punta de Sabana), Colombia (20 miles from Honda, Tolima; Minca and Cacagualito, Santa Marta; Naranjo; Popayán), and western Ecuadór (Guayaquil; Babahoyo; Balzár Mountains; Chimbo) to northwestern Peru (Tumbez; Lechugál).<sup>a</sup>

*Trogon caligatus* GOULD, Mon. Trog., ed. 1, 1838, pl. 7 and text (locality unknown; coll. J. Gould); ed. 2, 1858, pl. 16 and text.—GRAY, Cat. Fissir. Birds Brit. Mus., 1848, 43 (Mexico).—PELZELN, Sitz. Ak. Wien, xx, 1856, 495 (Mexico).—SCLATER, Proc. Zool. Soc. Lond., 1856, 286 (Córdova, Vera Cruz); 1859, 367 (Jalapa, Vera Cruz), 387 (Playa Vicente, Vera Cruz); 1860, 284 (Babahoyo, w. Ecuadór); 1864, 176 (near City of Mexico); Cat. Am. Birds, 1862, 276 (Guatemala).—MOORE, Proc. Zool. Soc. Lond., 1859, 53 (Omoa, Honduras).—SCLATER and SALVIN, Ibis, 1859, 132 (Pacific coast Guatemala), Proc. Zool. Soc. Lond., 1864, 364 (Panamá).—LAWRENCE, Ann. Lyc. N. Y., vii, 1862, 290 (Panamá); ix, 1868, 118 (San Mateo, Turrialba, Birris, and San Juan, Costa Rica).—SALVIN, Proc. Zool. Soc. Lond., 1867, 151 (Santa Fé de Verágua, Panamá); 1870, 202 (Calovévora and Castillo, Panamá); Ibis, 1872, 322 (Chontales, Nicaragua).—WYATT, Ibis, 1871, 374 (Naranjo, Colombia).—FRANTZIUS, Journ. für Orn., 1869, 312 (Costa Rica).—TACZANOWSKI, Proc. Zool. Soc. Lond., 1877, 328 (Lechugál, n. Peru); Orn. du Pérou, iii, 1886, 173 (Tumbez, n. Peru).—BOUCARD, Liste Ois. récol. Guat., 1878, 25; Proc. Zool. Soc. Lond., 1883, 458 (Yucatan; habits).—SALVIN and GODMAN, Ibis, 1880, 174 (Minca, Santa Marta, Colombia, 2,000 ft.); Biol. Centr.-Am., Aves, ii, 1896, 500.—SUMICHRAST, La Naturaleza, v, 1881, 239 (Omealca and Uvero, Vera Cruz).—NUTTING, Proc. U. S. Nat. Mus., v, 1882, 400 (La Palma de Nicoya, Costa Rica); vi, 1883, 387 (Sucuyá, Nicaragua).—ZELEDÓN, Proc. U. S. Nat. Mus., viii, 1885, 109 (Costa Rica); Anal. Mus. Nac. Costa Rica, i, 1887, 120 (Birris de Cartago, Naranjo de Cartago, Alajuela, Las Trojas, Jiménez, and San José, Costa Rica).—STONE, Proc. Ac. Nat. Sci. Phila., 1890, 206 (Tunkas, Yucatan).—GRANT, Cat. Birds Brit. Mus., xvii, 1892, 464, 465 (Balzár Mts. and Babahoyo, w. Ecuadór; Popayán, s. w. Colombia; etc.).—RICHMOND, Proc. U. S. Nat. Mus., xvi, 1893, 513 (Rio Escondido, Nicaragua).—CHERRIE, Expl. Zool. Merid. Costa Rica, 1893, 47 (Lagarto and Boruca, Costa Rica).—UNDERWOOD, Ibis, 1896, 444 (Volcán de Miravalles, Costa Rica).—HARTERT, Novit. Zool., v, 1898, 499 (Chimbo, n. w. Ecuadór, 1,000 ft.).—SALVADORI and FESTA, Boll. Mus. Zool., etc., Torino, xiv, 1899, no. 339, 8 (Punta de Sabana, Panamá).—LANTZ, Trans. Kansas Ac. Sci. for 1896-97 (1899), 220 (Naranjo, Guatemala).—ALLEN, Bull. Am. Mus. N. H., xiii, 1900, 135 (Cacagualito and Minca, Santa Marta, Colombia).—BANGS, Proc. New Engl. Zool. Club, ii, 1900, 19 (Loma del León, Panamá); Auk, xviii, 1901, 360 (Divala, Panamá).—SKINNER, Condor, iii, 1901, 77, 78 (Tapachula, Chiapas; habits; descr. nest and eggs).—ALFARO, Páginas Ilustradas, i, 1904, 531 (Costa Rica; habits; descr. nest and eggs).—COLE, Bull. Mus. Comp. Zool., i, 1906, 129 (Chichen, Itza, Yucatan).—DEARBORN, Pub. 125, Field Mus. N. H., 1907, 88 (Gualán, Mazatenango, and Patulúl, Guatemala; crit.).—FERRY, Pub. 146, Field Mus. N. H., orn. ser., i, no. 6, 1910, 265 (Guayabo, Costa Rica).

<sup>a</sup> I have not seen specimens from northern Peru and very few from western Ecuadór. It is possible that these are separable from true *C. caligatus*.



- Trogon caligatus* GRAY, Gen. Birds, i, 1845, 70.—BONAPARTE, Consp. Av., i, 1850, 149.
- [*Trogon caligatus* GRAY, Hand-list, i, 1869, 81, no. 955.—SUMICHRIST, Mem. Bost. Soc. N. H., i, 1869, 562 (hot region Vera Cruz).—SCLATER and SALVIN, Nom. Av. Neotr., 1873, 104.—BERLEPSCH, Journ. für Orn., 1884, 318 (Naranjo, Colombia); Proc. Zool. Soc. Lond., 1885, 118 (Babahoyo, w. Ecuador).—SHARPE, Hand-list, ii, 1900, 148.
- Trogon caligatus caligatus* BANGS, Bull. Mus. Comp. Zool., xxxix, July, 1903, 144 (Yaruca, Honduras; crit.); Auk, xxiv, 1907 (Boruca, Barranca, and Barranca de Punta Arenas, Costa Rica).—CARRIKER, Ann. Carnegie Mus., vi, 1910, 561 (Costa Rica; crit.; habits).
- Trogon concinnus* LAWRENCE, Ann. Lyc. Nat. Hist. N. Y., vii, Feb., 1862, 463 (Lion Hill, Panamá; coll. G. N. Lawrence); ix, 1868, 119 (San Juan, Costa Rica).—FRANTZIUS, Journ. für Orn., 1869, 312 (Costa Rica).
- [*Trogon concinnus* GRAY, Hand-list, i, 1869, 82, no. 965.
- Trogon caligatus concinnus* BANGS, Bull. Mus. Comp. Zool., xxxix, July, 1903, 145, in text.—THAYER and BANGS, Bull. Mus. Comp. Zool., xlvi, 1906, 216 (Sabana de Panamá).
- A[ganus] concinnus* CABANIS and HEINE, Mus. Hein., iv, Feb., 1863, 188, footnote (Panamá; crit.).
- A[ganus] lepidus* CABANIS and HEINE, Mus. Hein., iv, Feb., 1863, 187 (Babahoyo, w. Ecuador; coll. Heine Mus.).
- [*Trogon lepidus* GRAY, Hand-list, i, 1869, 82, no. 961.
- A[ganus] braccatus* CABANIS and HEINE, Mus. Hein., iv, Feb., 1863, 184 (Mexico; coll. Heine Mus.).
- [*Aganus braccatus* HEINE and REICHENOW, Nom. Mus. Hein. Orn., 1890, 209 (Mexico).
- [*Trogon braccatus* GRAY, Hand-list, i, 1869, 82, no. 959.
- Trogon braccatus* LAWRENCE, Bull. U. S. Nat. Mus., no. 4, 1876, 31 (Guichicovi, Oaxaca).—SUMICHRIST, La Naturaleza, v, 1881, 239.
- Trogon chrysomelas*, supposed female, RICHMOND, Proc. U. S. Nat. Mus., xvi, 1893, 512 (Rio Escondido, Nicaragua; description).

#### Genus TEMNOTROGON Bonaparte.

- Temnotrogon* BONAPARTE, Consp. Voluc. Zygod., 1854, 14 (estr. dall' Atteneo Italiano, no. 8, May, 1854). (Type, *Trogon roseigaster* Vieillot.)
- Tmetotrogon*<sup>a</sup> (emendation) CABANIS and HEINE, Mus. Hein., iv, Heft i, Jan., 1863, 166.

Rather small Trogons, resembling *Trogonurus* but auricular feathers elongated, slender (filamentous), curving outward terminally, anterior toes united for basal phalanx only, the adult female with upper parts metallic-colored.

Bill rather stout, the culmen strongly arched, rounded (not ridged), not depressed basally; gonys slightly shorter than mandibular rami, distinctly convex, strongly ascending, the tip of mandible forming a distinct ascending point; basal width of interramal space equal to or greater than its length; tomia distinctly serrate, the subterminal notch deep. Nostril roundish, non-operculate, mostly covered by

<sup>a</sup> "Von *τμήτης* (geschnitten, gestutzt), *τρώγων* (Nager)." (Cabanis and Heine.)

slender, decurved, antrorse bristles; feathers of chin and malar apex antrorse, forming slender bristles, the former strongly recurved; auricular feathers with elongated filamentous tips, curved outward terminally; sixth primary longest, the seventh slightly shorter, the tenth (outermost) much less than half as long as eighth; tail much longer than wing, the middle rectrices truncate, the lateral ones subtruncate at tip, the outermost pair strongly bowed basally. Tarsus about as long as longest anterior toe (without claw), the lower half naked; anterior toes united for basal phalanx only.

*Coloration*.—Adult male with upper parts, including wing-coverts, metallic green, the middle rectrices, with outer web, metallic greenish blue, inner web grayish bronze, the throat, chest, and breast slate-gray, the abdomen and under tail-coverts red, the lateral rectrices broadly tipped with white; adult female similar, but wing-coverts and secondaries blackish, narrowly barred with white.

*Range*.—Island of Haiti, Greater Antilles. (Monotypic.)

#### TEMNOTROGON ROSEIGASTER (Vieillot).

##### HAITIAN TROGON.

*Adult male*.—Pileum rather dull metallic bronze-green or greenish bronze; back, scapulars, anterior lesser wing-coverts, and upper rump brighter bronze-green, passing into pure metallic green or slightly bluish green on lower rump and upper tail-coverts; outer web of middle pair of rectrices dark metallic blue or greenish blue, except a small subterminal (usually triangular) area of grayish bronze or olive bronze, the inner web grayish bronze, bronze-gray, or bronzy olive, broadly tipped with dark metallic blue; next two pairs of rectrices wholly dark metallic blue or greenish blue, the three outer pairs similar but extensively white terminally, the white area occupying a much greater portion of outer web (most of outer web on outermost pair), which has a subterminal spot of dark metallic blue or blue-black; under surface of inner web of three lateral rectrices (on each side) with an area (more or less well defined) of metallic grayish between the basal dark metallic blue and a subterminal spot of dark metallic blue or blue-black; posterior lesser, middle, greater and primary wing-coverts, alula, and secondaries blackish, more or less glossed with bronze-greenish (at least on coverts) and narrowly but very regularly barred with white; primaries black, their outer web marked with quadrate spots of white, except proximal portion of longer quills, which are more or less continuously white or edged with white; lores dusky, passing into slate color on orbital, auricular, and malar regions, chin, and upper throat, the lower throat and chest slate-gray, more or less strongly glossed (especially on chest) with bronze-green or greenish bronze: breast, upper abdomen, and ante-

rior portion of sides clear gray, slightly paler posteriorly; rest of under parts intense pure geranium red, darker along anterior margin, where the line of demarkation between the red and gray is very sharply defined and very regularly transverse; thighs slate-gray or slate color, the feathers of upper portion of tarsus darker; bill yellow; feet dusky horn color (in dried skins); length (dried skins), 262–294 (284); wing, 132.5–145 (138.4); tail, 154–170.5 (160.7); culmen, 16.5–19 (17.4); tarsus, 16–17.5 (16.7); inner anterior toe, 15.5–17 (16.3).<sup>a</sup>

*Adult female*.—Similar to the adult male, but wing-coverts and secondaries without white bars, the former grayish olive margined terminally with metallic bronze-green or bronze, the latter plain slate-gray; primaries without quadrate white spots on outer web, which is grayish distally, white proximally; length (skins), 267–285 (276); wing, 133.5–141 (136.2); tail, 149.5–187.5 (163); culmen, 16.5–17.5 (17); tarsus, 16–17 (16.7); inner anterior toe, 14.5–16.5 (15.7).<sup>b</sup>

Island of Haiti, Greater Antilles (Port au Prince, Haiti; Aguacate, La Vega, and mountains above Harabajoa, Santo Domingo).

*Trogon roseigaster* VIEILLLOT, Nouv. Dict. d'Hist. Nat., viii, 1817, 314 (Santo Domingo; "Mexico"); Tabl. Enc. Méth., iii, 1823, 1358.—GOULD, Mon. Trog., ed. 1, 1838, pl. 20 and text; ed. 2, 1858, pl. 32 and text.—SALLÉ, Proc. Zool. Soc. Lond., 1857, 235 (Santo Domingo; habits).—BRYANT, Proc. Bost. Soc. N. H., xi, 1867, 95 (Santo Domingo).

[*Trogon*] *roseigaster* GRAY, Gen. Birds, i, 1845, 69.—BONAPARTE, Consp. Av., i, 1850, 149.

[*Trogon*] *roseigaster* GRAY, Hand-list, i, 1869, 83, no. 987.

*Temnurus roseigaster* GOULD, Mon. Trog., ed. 1, 1838, Synop. Species of *Temnurus*, sp. 2.

*Trogon* (*Temnurus*?) *roseigaster* GOULD, Mon. Trog., ed. 1, 1838, List of Plates, sp. 20.

[*Temnotrogon*] *roseigaster* BONAPARTE, Consp. Voluc. Zygod., 1854, 14.—CORY, List Birds West Ind., 1885, 18.

*Temnotrogon roseigaster* CORY, Birds of Haiti and San Domingo, 1885, 95; Auk, iii, 1886, 360; xii, 1895, 279 (Santo Domingo); Birds West Ind., 1889, 155; Cat. West Ind. Birds, 1892, 11, 103, 131, 142.—CHERRIE, Contr. Orn. San Dom., 1896, 19 (Aguacate, Santo Domingo).—CHRISTY, Ibis, 1897, 330 (mts. above Harabajoa, Santo Domingo).

[*Temnotrogon*] *roseigaster* CORY, Birds Haiti and San Domingo, 1885, pl. (13).

[*Temnotrogon*] *roseigaster* GOULD, Mon. Trog., ed. 2, 1875, Synopsis of Species, p. xix.

*Trogon rhodogaster* TEMMINCK, Pl. Col., iii, livr. 63, May, 1825, gen. Couroucou, sp. 14 (based on Levaillant, Courouc., pl. 13, p. 18; *Caleçon rouge* Buffon).

[*Temnotrogon*] *rhodogaster* CABANIS and HEINE, Mus. Hein., iv, Feb., 1863, 166 (Haiti).

*Temnotrogon rhodogaster* GRANT, Cat. Birds Brit. Mus., xvii, 1892, 438.

[*Temnotrogon*] *rhodogaster* SHARPE, Hand-list, ii, 1900, 147.

[*Temnotrogon*] *rhodogaster* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 103.

*Trogon domicellus* CUVIER, Règne Anim., ed. 2, i, 1829, 459.

<sup>a</sup> Nine specimens.

<sup>b</sup> Four specimens.



## Genus PRIOTELUS Gray.

*Temnurus* <sup>a</sup> (not of Lesson, 1831) SWAINSON, Classif. Birds, ii, July, 1837, 337.

(Type, *T. albicollis* Swainson=*Trogon temnurus* Temminck.)

*Priotelus* GRAY, List. Gen. Birds, 1840, 10. (Type, *Trogon temnurus* Temminck.)

*Prionotelus* (emendation) REICHENBACH, Av. Syst. Nat., 1850, pl. 88.—CABANIS and HEINE, Mus. Hein., iv, 1863, 164.

*Prionoteles* (emendation) SCLATER and SALVIN, Nom. Av. Neotr., 1873, 103.

Rather small Trogons agreeing with *Temnotrogon* in filamentous auricular feathers, slight extent of cohesion of anterior toes, and similarity of sexes in coloration, but differing conspicuously in form of middle rectrices (which are concavely incised and laterally pointed terminally) and in conspicuous white subterminal spots on outer webs of secondaries.

Bill rather stout but broader than deep basally, the culmen moderately arched, rounded (not ridged), the gonys about as long as mandibular rami, distinctly convex, strongly ascending terminally, the tip of mandible forming a distinct but small ascending point; basal width of interramal space about equal to its length; tomia distinctly serrate. Nostril roundish, non-operculate, concealed, or nearly so, by antrorse, decurved bristles. Feathering of head normal, except auricular feathers, which have elongated, filamentous tips, curved outward; feathers of chin and malar apex bristle-like, antrorse, the former strongly recurved; seventh, or seventh and sixth primaries longest, the tenth (outermost) less than half as long as eighth; tail longer than wing, the eight middle rectrices with tip strongly concavely incised, with web on each side of the excision expanded and prolonged into sub-falcate points, the two lateral pairs with tip obliquely truncate or subtruncate, with inner web longest and usually (at least in adult males) forming a blunt or rounded point. Tarsus longer than longest anterior toe (without claw), naked for lower half or more; anterior toes united for basal phalanx only.

*Coloration*.—Pileum dark metallic violet-blue to greenish blue, passing into black on sides of head; rest of upper parts except remiges and lateral rectrices metallic green, more bluish on rump and upper tail-coverts; remiges spotted with white, the lateral rectrices extensively white terminally; anterior under parts, as far backward as middle of abdomen, light gray (the throat more whitish), posterior under parts red. (Sexes alike.)

*Range*.—Island of Cuba, Greater Antilles. (Monotypic.)

## KEY TO THE SUBSPECIES OF PRIOTELUS TEMNURUS.

- a*. Larger (male averaging: Wing 123.6, tail 116.4, tarsus 16.8, inner anterior toe, 15.3, female averaging: Wing 121.8, tail 114.4, tarsus 17, inner anterior toe 15.2); bill relatively smaller and narrower; red of under parts deeper. (Island of Cuba.)

*Priotelus temnurus temnurus* (p. 794).

<sup>a</sup> Τέμνω, I cut; οὐρά, a tail. (Richmond.)

aa. Smaller (male averaging: Wing 117.8, tail 112.8, tarsus 16, inner anterior toe 14.4; female averaging: Wing 117.6, tail 113.6, tarsus 16.4, inner anterior toe 14.4); bill relatively larger and broader; red of under parts lighter. (Isle of Pines, south of Cuba.).....*Priotelus temnurus vescus* (p. 795).

### PRIOTELUS TEMNURUS TEMNURUS (Temminck).

#### CUBAN TROGON.

*Adult male*.—Pileum dark metallic blue, more violaceous on occiput; loreal, suborbital, and auricular regions black; back, scapulars, and rump metallic green or slightly bronzy green, passing into more bluish green on hindneck and upper tail-coverts; six middle rectrices glossy blue-black or dark violaceous blue, the middle pair with outer webs brighter and less violaceous blue, passing into dark violet-blue terminally, their inner webs bronze-green or greenish bronze, passing, through blue, into dark violet-blue terminally; three outer rectrices (on each side) extensively white terminally, blue-black basally, the outer web of second and third with one to three white spots on black portion of outer web, the inner web sometimes with one or two transverse spots of white; lesser and middle wing-coverts dark metallic green, broadly margined with much brighter green; greater coverts very dark bluish green narrowly edged with brighter bluish green, the outer web with a very large terminal subquadrate spot of white; alula and primary coverts black, the former with three white spots on outer web, the latter with a subterminal spot of white; proximal secondaries (tertials) dark metallic bluish green; other secondaries black, edged with metallic bluish green and with a very large subterminal quadrate spot of white on outer web; primaries black, the terminal half (more or less) of outer web with quadrate spots of white, the basal portion continuously white, except the two outermost, which are spotted to the base; chin, throat, and malar region white, passing into clear gray (no. 7) on chest, breast, and upper abdomen and sides, the remaining under parts pure geranium red, the line of demarkation between the red and the gray forming a very sharp transverse line; thighs grayish white, the feathers dark grayish basally; maxilla brownish black, except rictal portion, which, together with the mandible, is dull vermilion red; iris carmine red;<sup>a</sup> feet dark brownish (in dried skins); length (skins), 247–260 (255); wing, 117–128 (123.6); tail, 105.5–124.5 (116.4); culmen, 16.5–18 (16.8); tarsus, 16–18 (16.8); inner anterior toe, 15–16.5 (15.3).<sup>b</sup>

*Adult female*.—Precisely like the adult male, but averaging slightly smaller; length (skins), 248–258 (251); wing, 118–125 (121.8); tail, 106–120 (114.4); culmen, 16–18 (17.2); tarsus, 16.5–17.5 (17); inner anterior toe, 14–16 (15.2).<sup>c</sup>

<sup>a</sup> Palmer and Riley.

<sup>b</sup> Ten specimens.

<sup>c</sup> Six specimens.

Island of Cuba (Havana; Cabañas; El Guamá; Guamá; Guantánamo; Baracoa; San Diego de los Baños; near Trinidad; San Cristóbal; Holquín; Remédios; Figuabas; Santiago de Cuba).

*Trogon temnurus* TEMMINCK, Pl. Col., iii, livr. 55, Feb., 1825, pl. 326 and text (Havana, Cuba).—VIGORS, Zool. Journ., iii, 1827, 443.—LESSON, Traité d'Orn., 1831, 120.—GOULD, Mon. Trog., ed. 1, 1838, pl. 19 and text.—D'ORBIGNY, in La Sagrás Hist. Nat. Cuba, Ois., 1840, 165, atlas, pl. 26.—GUNDLACH, Journ. Bost. Soc. N. H., vi, 1857, 319.

*Trogon temnura* CLARK, Proc. Zool. Soc. Lond., 1841, 53.

*P[riotelus] temnurus* GRAY, List Gen. Birds, 1840, 10; Gen. Birds, i, 1845, 70.

*Priotelus temnurus* GRAY, List Fissir. Birds Brit. Mus., 1848, 43.—CABANIS, Journ. für Orn., 1856, 106 (habits).—GUNDLACH, Journ. für Orn., 1859, 348; 1874, 165 (habits); Repert. Fisico-Nat. Cub., i, 1866, 298; Orn. Cubana, ed. 1895, 153.—CORY, Auk, iii, 1886, 360; Birds West Ind., 1889, 155; Cat. West Ind. Birds, 1892, 11, 103, 128, 142.—HARTERT, Kat. Vogelsamml. Mus. Senckenb., 1891, 135.—CHAPMAN, Bull. Am. Mus. N. H., iv, 1892, 299 (near Trinidad, s. Cuba; habits).

*[Priotelus] temnurus* BONAPARTE, Consp. Av., i, 1850, 150.—GRAY, Hand-list, i, 1869, 83, no. 988.—GUNDLACH, Journ. für Orn., 1861, 336.—SHARPE, Hand-list, ii, 1900, 147.

*P[riotelus] temnurus* CABANIS and HEINE, Mus. Hein., iv, 1863, 164, footnote.

*Prionotelus temnurus* GOULD, Mon. Trog., ed. 2, 1875, pl. 33 and text.—GRANT, Cat. Birds Brit. Mus., xvii, 1892, 439 (San Cristóbal and Remédios, Cuba).—MENECAUX, Rev. Franç. d'Orn., no. 2, 1909, 23 (Figuabas, e. Cuba).

*Prionoteles temnurus* GOULD, Mon. Trog., ed. 2, 1875, List of Plates, sp. 33.

*[Prionoteles] temnurus* SCLATER and SALVIN, Nom. Av. Neotr., 1873, 103.—CORY, List Birds West Ind., 1885, 18.

*Temnurus albicollis* SWAINSON, Classif. Birds, ii, July, 1837, 337.

*Trogon (Temnurus) albicollis* GOULD, Mon. Trog., ed. 1, 1838, List of Plates, sp. 19.

*Trogon silens* WÜRTEMBERG, Erste Reise Nordliche Amerika, 1835, 68, 74, footnote, in text (Cuba).

*Temnurus silens* HARTLAUB, Naumannia, 1852, 51.

### PRIOTELUS TEMNURUS VESCUS Bangs and Zappey.

#### ISLE OF PINES TROGON.

Similar to *P. t. temnurus*, but with decidedly shorter wing, tail, and middle toe, and relatively larger and broader bill, and with red of under parts appreciably lighter.

*Adult male*.—Length (skins), 232–243 (239); wing, 116.5–119 (117.8); tail, 108–122 (112.8); culmen, 17–18 (17.5); tarsus, 15.5–16.5 (16); inner anterior toe, 14–15.5 (14.7).<sup>a</sup>

*Adult female*.—Length (skins), 234–238 (236); wing, 116–120 (117.6); tail, 111.5–116 (113.6); culmen, 16.5–17.5 (17); tarsus, 16–17 (16.4); inner anterior toe, 13.5–15 (14.4).<sup>a</sup>

Isle of Pines, near Cuba (Almacigos; Nueva Gerona; Callebónita; Puebla Nueva; Pasadita).

*Prionotelus temnurus vescus* BANGS and ZAPPEY, Am. Nat., xxxix, no. 460, April, 1905, 204 (Almacigos, Isle of Pines, Cuba; coll. E. A. and O. Bangs).

<sup>a</sup> Four specimens.





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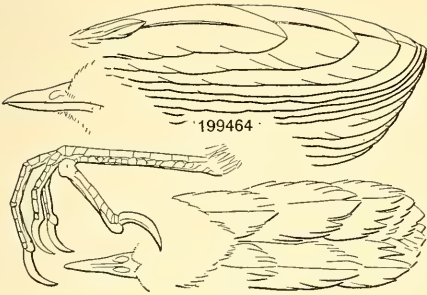
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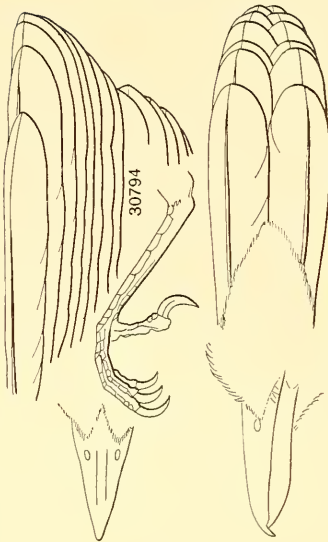
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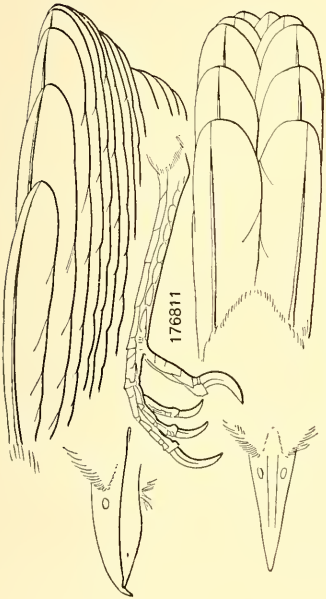




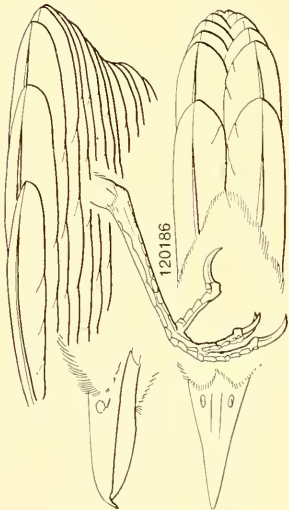
1. *SCYTALOPUS* *argentifrons*.



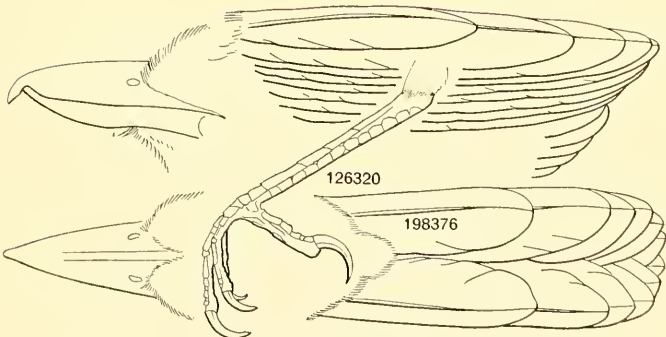
2. *THAMNISTES* *anabatinus*.



3. *HYPLOPHUS* *melanonotus*.



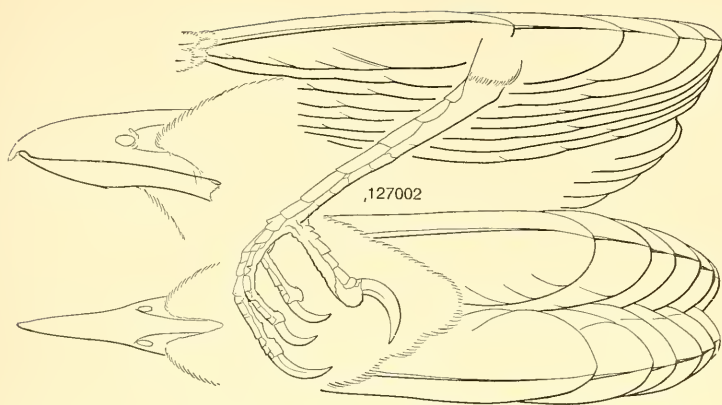
4. *ERIONOTUS* *atrinuchus*.



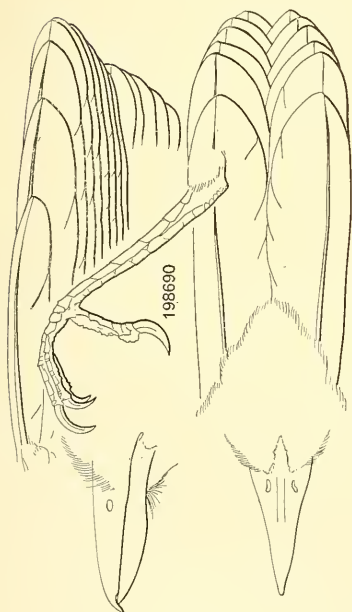
5. *CYMBILAIMUS* *fasciatus*.



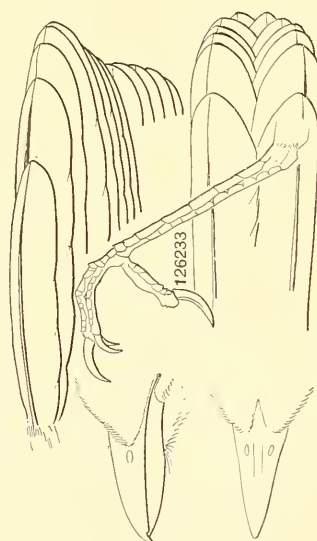




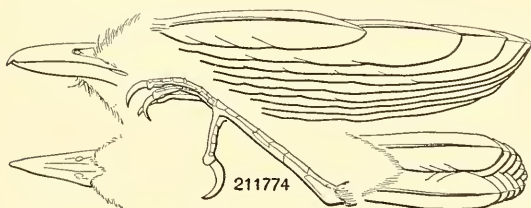
1. *TARABA transandeara*.



2. *ABALIUS punctatus*.



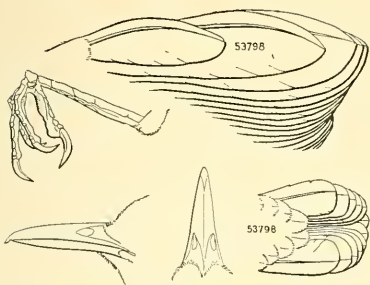
3. *THAMNOPHILUS mexicanus*.



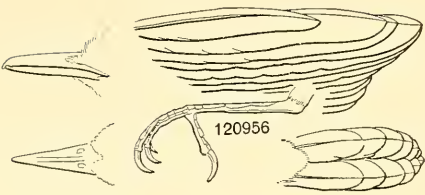
4. *DYSITHAMNUS septentrionalis*.



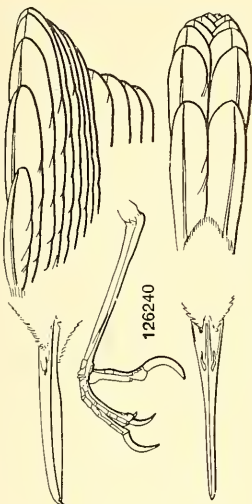




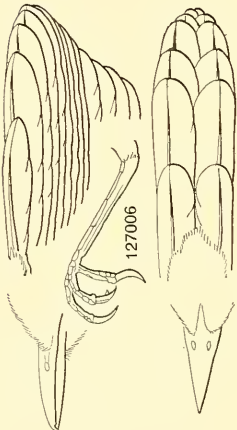
1. MYRMYOTHERULA surinamensis.



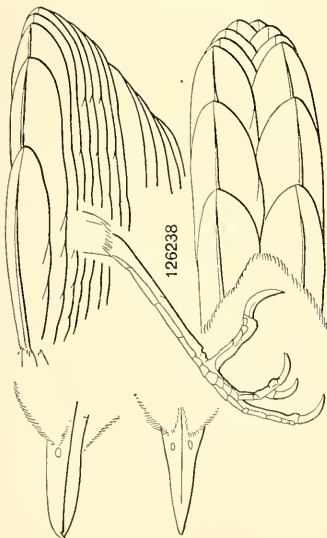
2. MYRMOPAGIS axillaris.



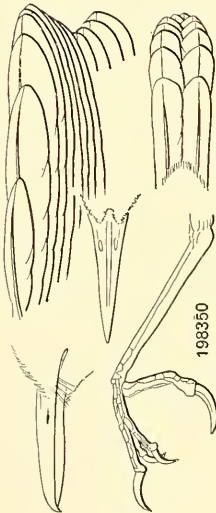
3. RAMPHOCÆNUS rufiventris.



4. MICRORHOPIAS boucardi.

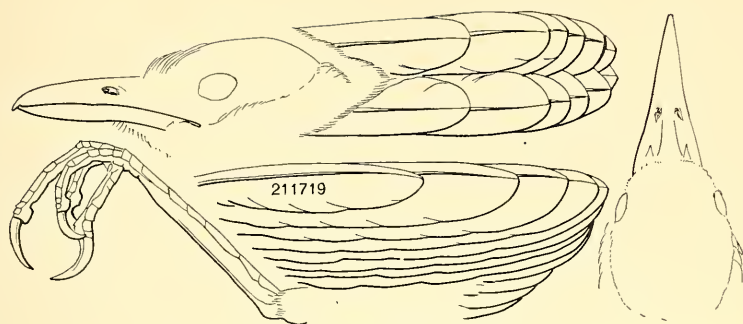


5. CERCOMACRA tyrannina.

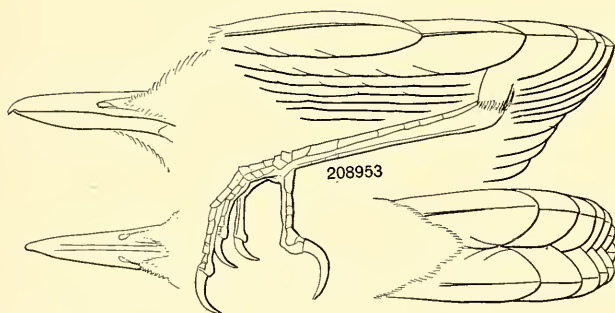


6. MICROBATES semitorquatus.

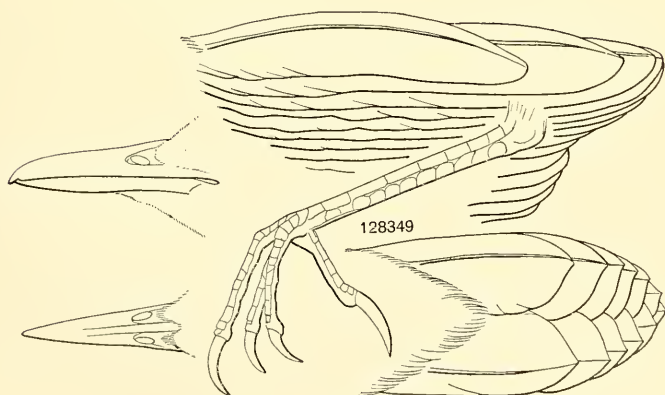




1. *GYMNOCICHLA erratilis*.



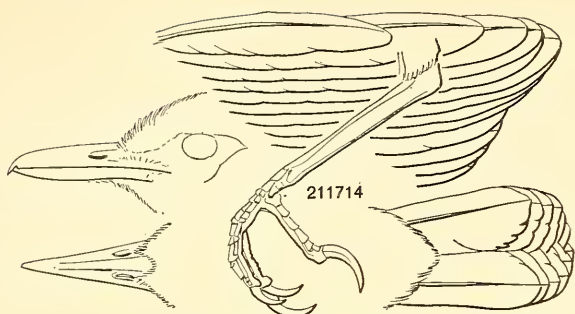
2. *MYRMECIZA exsul*.



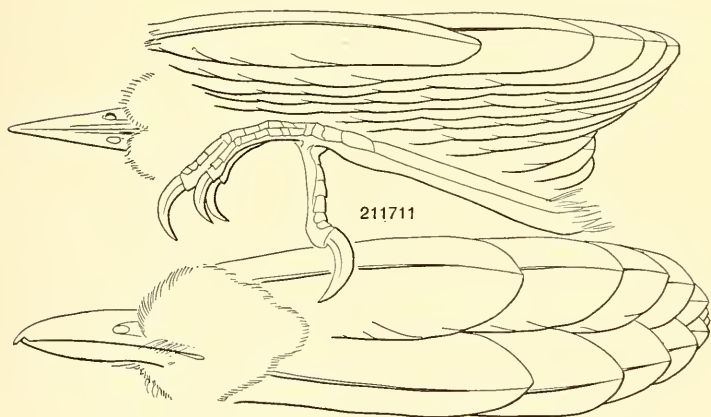
3. *FORMICARIUS umbrosus*.



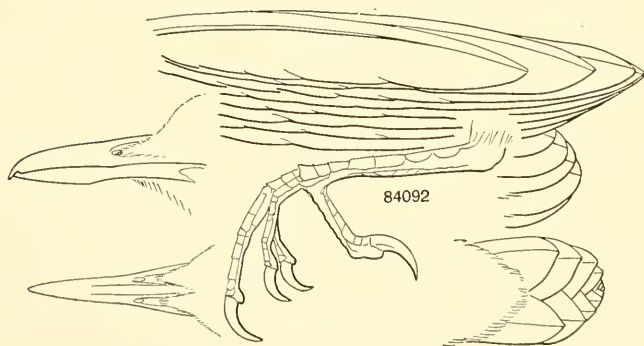




1. ANOPLOPS olivascens.



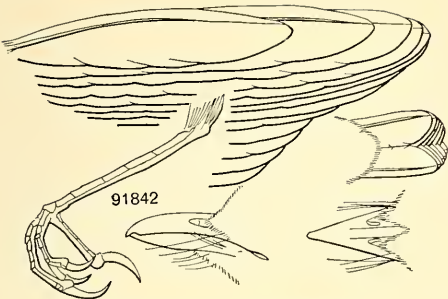
2. PHÆNOSTICTUS saturatus.



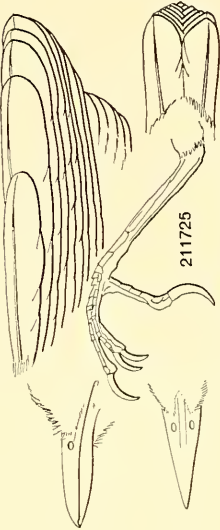
3. RHOPOTERPE torquata.



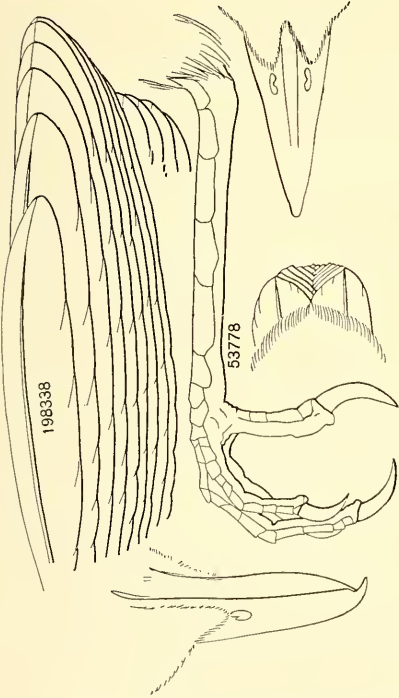




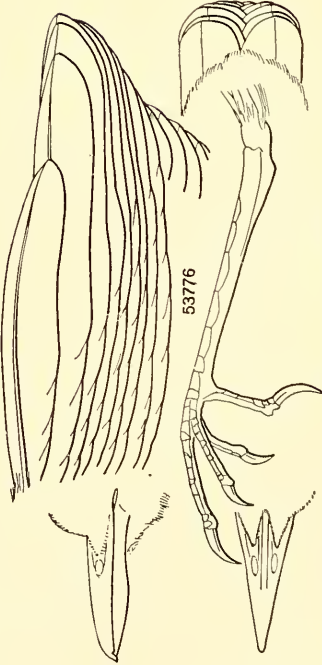
1. GRALLARICULA costaricensis.



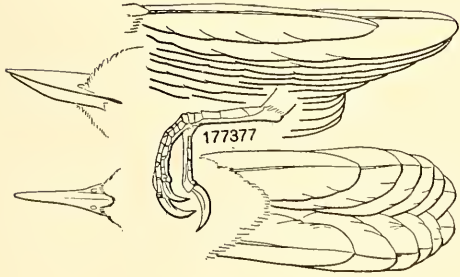
2. HYLOPHYLAX navioides.



3. PITTASOMA zeledoni.

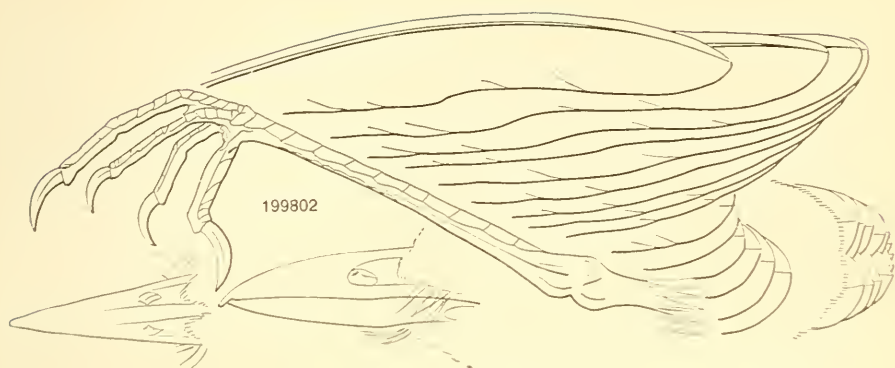


4. HYLOPEZUS perspicillatus.

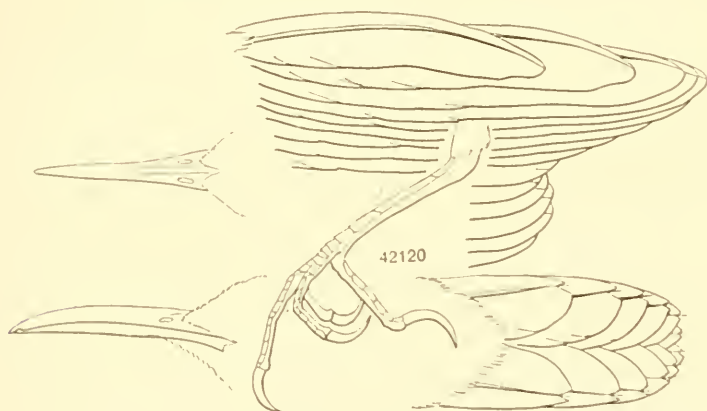


5. XENOPS mexicanus.





1. GRALLARIA princeps.



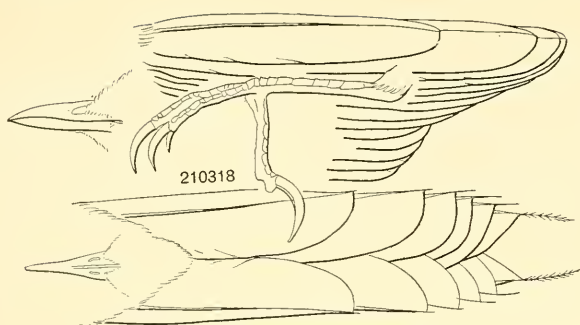
2. SCLERURUS mexicanus.



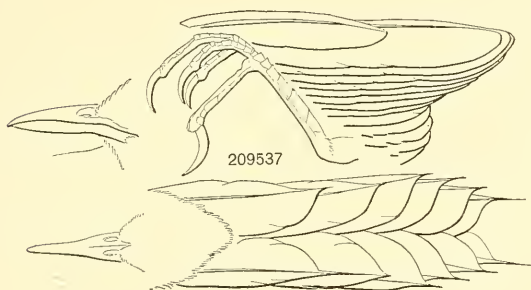
3. SCLERURUS guatemalensis.



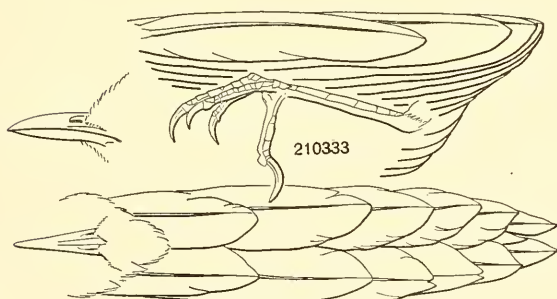




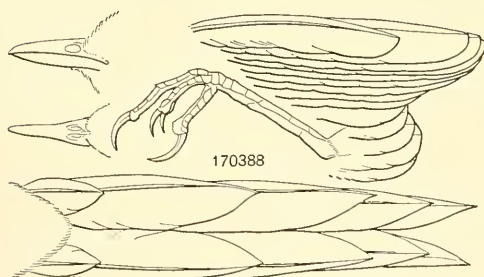
1. *MARGARORNIS rubiginosa*.



2. *PREMNOPLEX brunneicauda*.



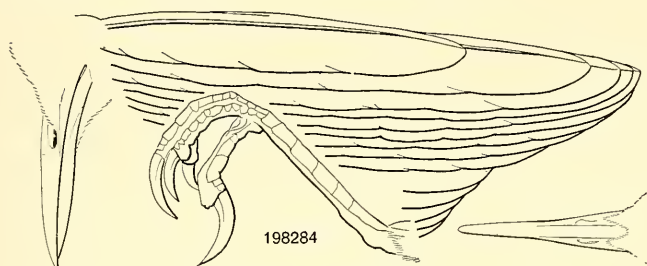
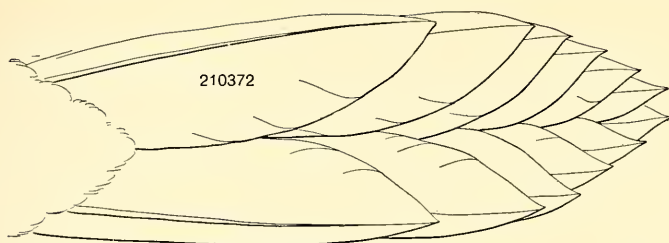
3. *ACRORCHILUS rufigenis*.



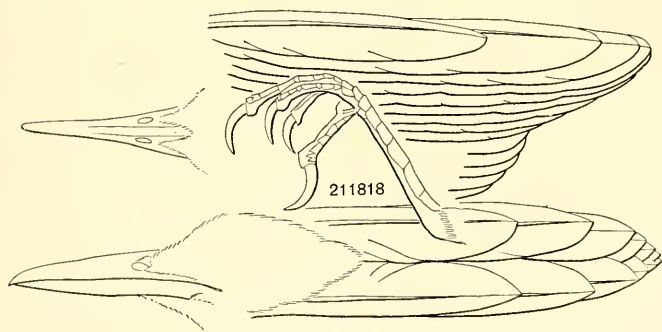
4. *SYNALLAXIS albigularis*.



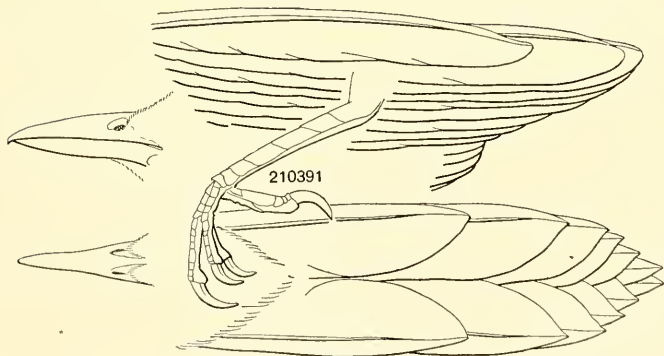




1. *PSEUDOCOLAPTES lawrencii*.

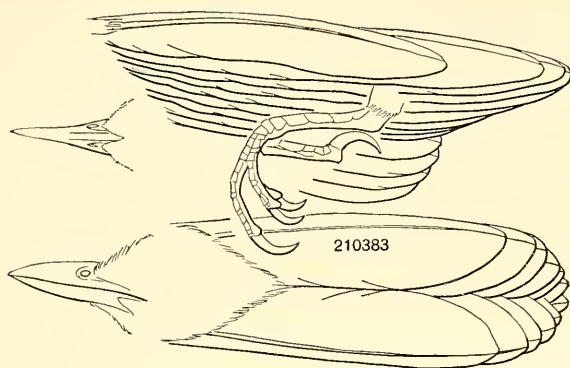


2. *HYLOCTISTES virgatus*.

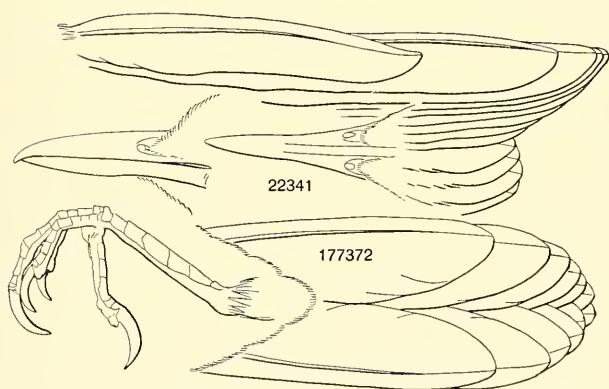


3. *PHILYDOR panerythrus*.

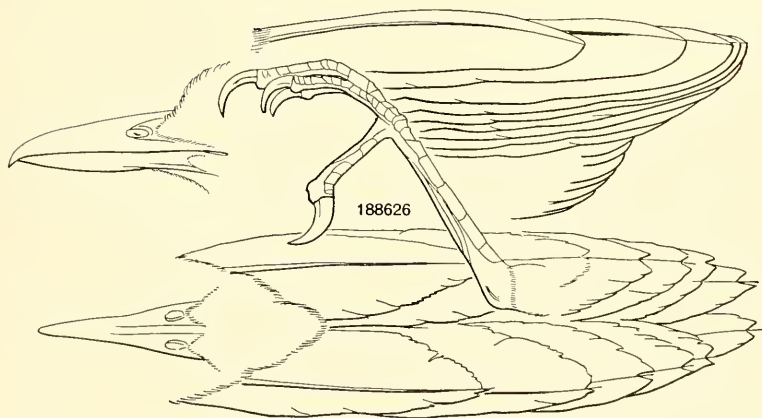




1. *XENICOPSIS* *variegaticeps*.



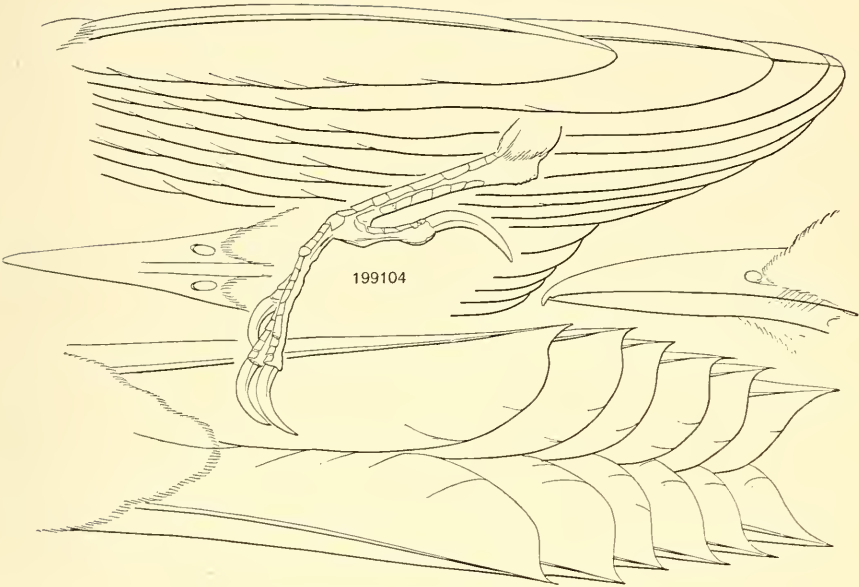
2. *AUTOMOLUS* *cervinularis*.



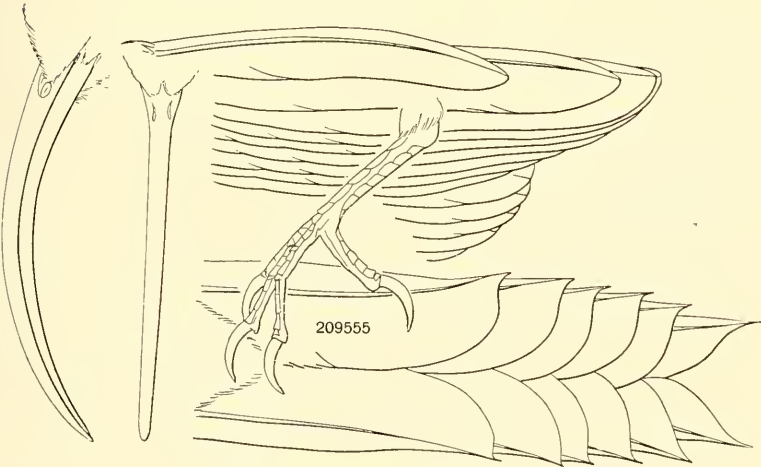
3. *RHOPOCTITES* *rufo-brunneus*.







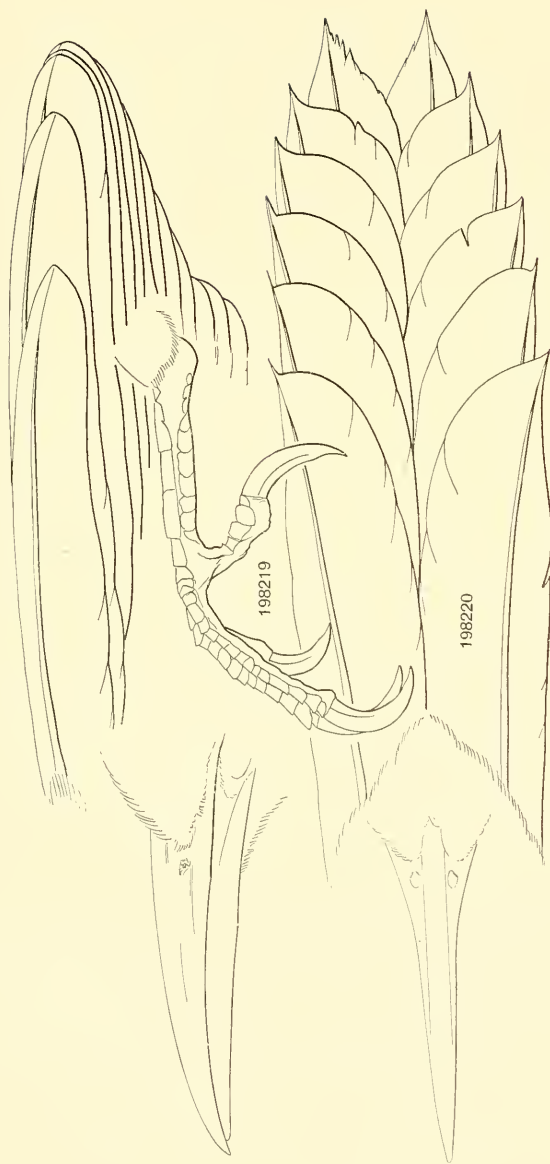
1. *DENDROCOLAPTES sancti-thomae*.



2. *CAMPYLORHAMPHUS borealis*.

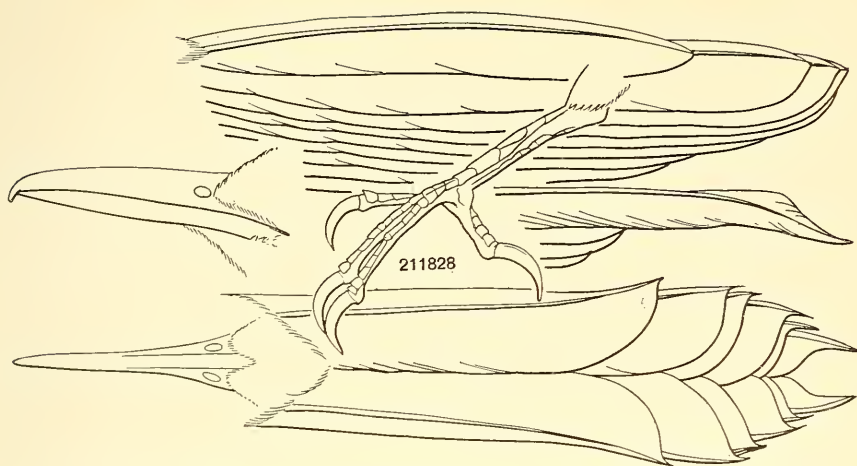




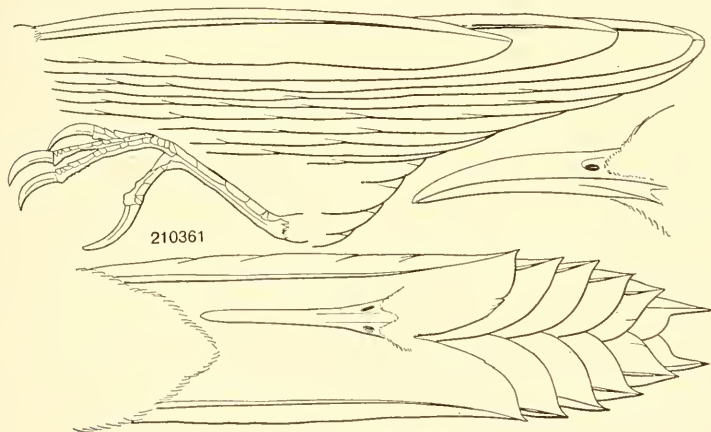


I. XIPHOCOLAPTES costaricensis.

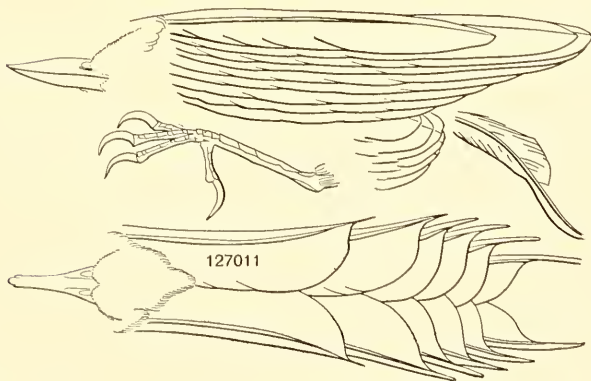




1. *XIPHORHYNCHUS punctigulus*.



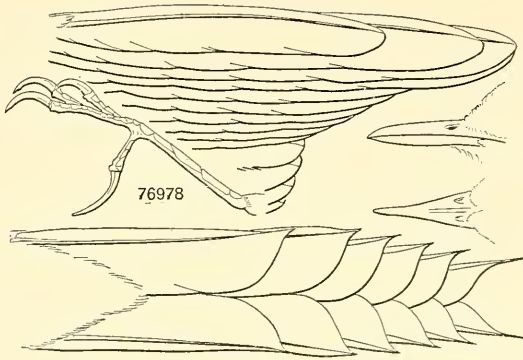
2. *PICOLAPTES affinis*.



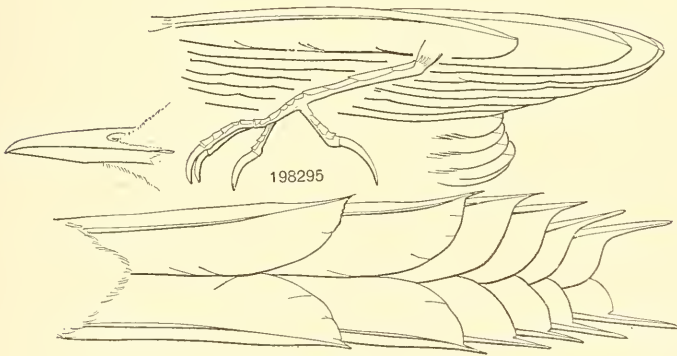
3. *GLYPHORHYNCHUS pectoralis*.



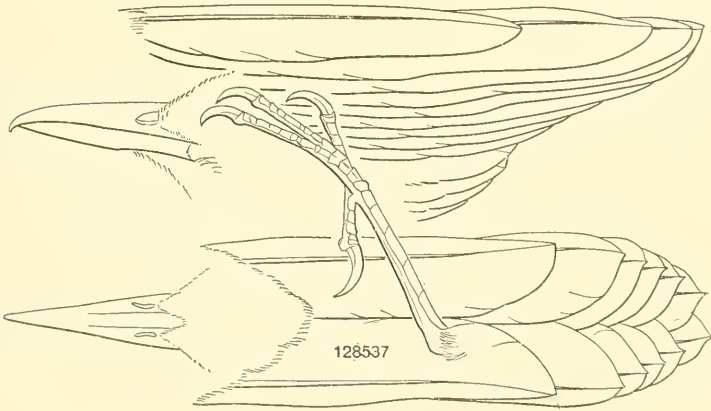




1. *SITTASOMUS sylvicoides*.

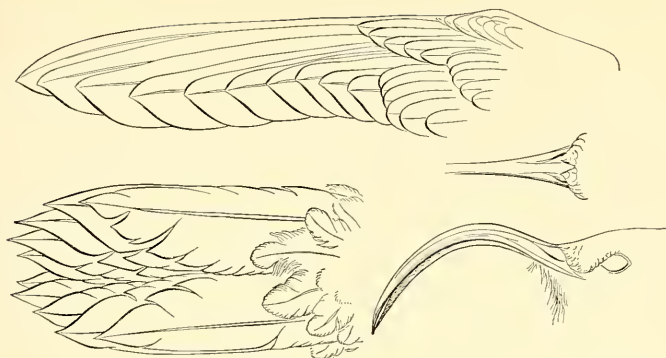


2. *DECONYCHURA typica*.

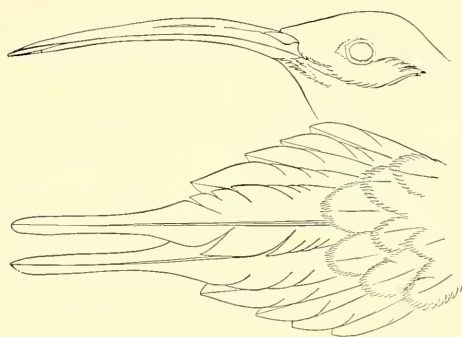


3. *DENDROCINCLA anabatina*.

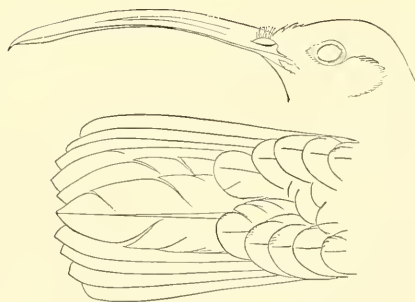




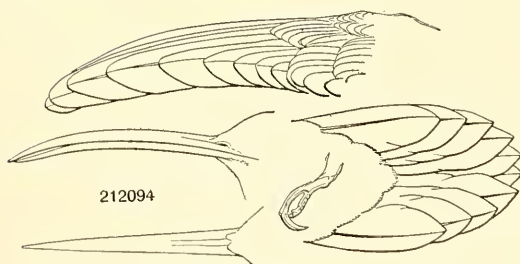
1. *EUTOXERES aquila*.



2. *PHÆTHORNIS superciliosus*.



3. *GLAUCIS hirsuta*.



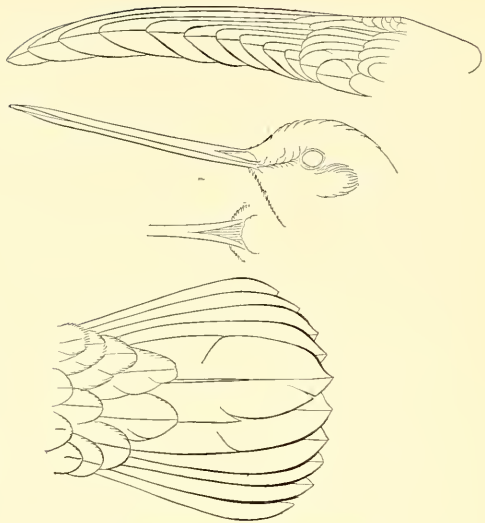
4. *THRENETES ruckeri*.



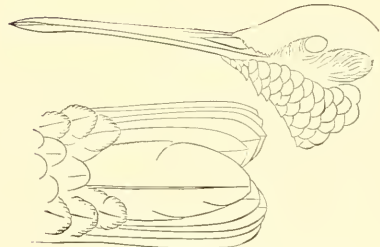




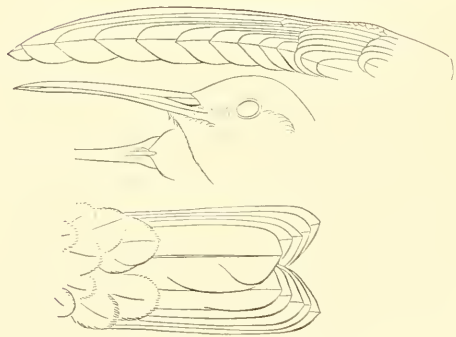
1. *AITHURUS polytmus*.



2. *HEMISTEPHANIA ludovicæ*.



3. *ANTHOSCENUS longirostris*.



4. *PHÆOPTILA sordida*.

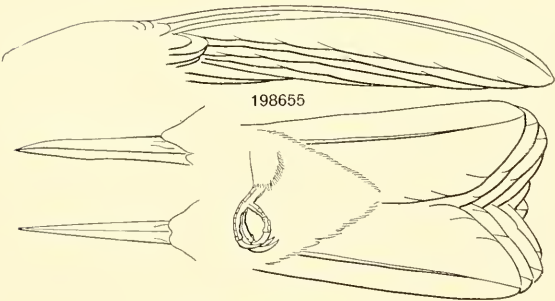




1. PAMPA pampa.



2. CAMPYLOPTERUS ensipennis.

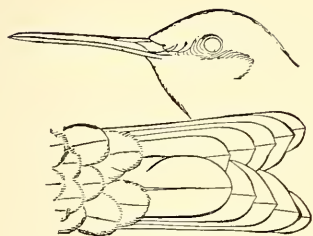


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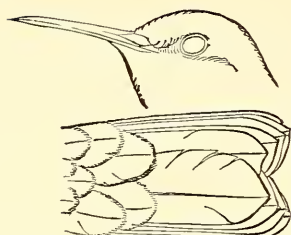
3. PHÆOCHROA cuvieri.



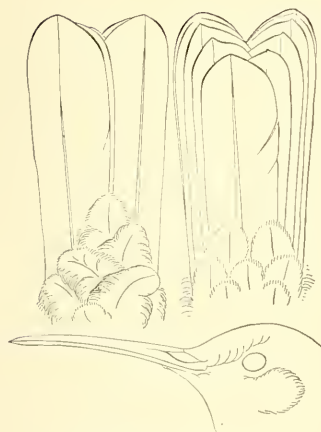




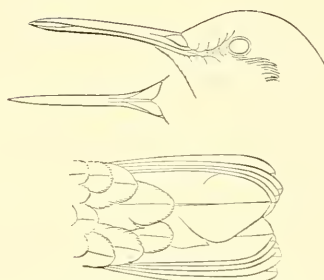
1. *CYNANTHUS latirostris*, ♂.



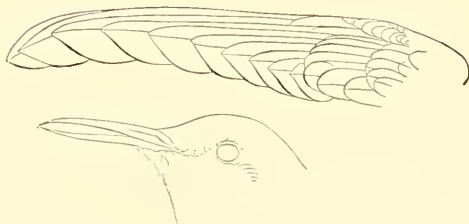
2. *BASILINNA leucotis*, ♂.



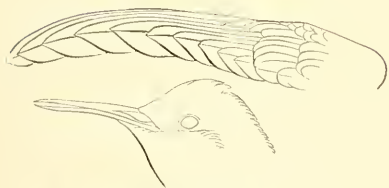
3. *CHALYBURA buffoni*, ♂.



4. *HYLOCHARIS sapphirina*, ♂.



5. *EUPHERUSA eximia*, ♂.

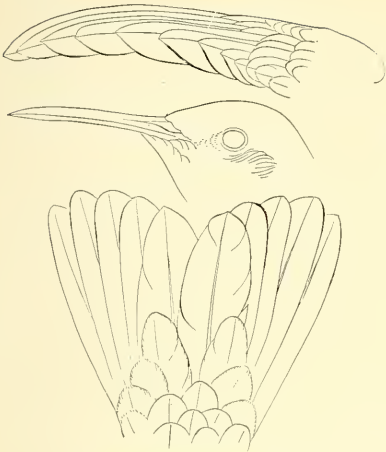


6. *CALLIPHARUS nigriventris*, ♂.

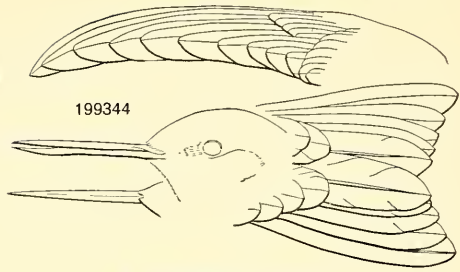


7. *ELVIRA cupreiceps*, ♂.



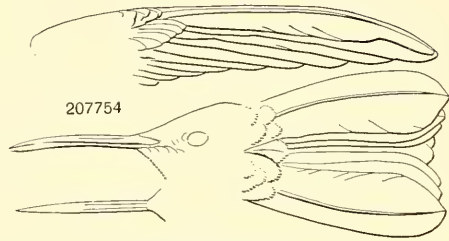


1. *AGYRTRIA niveipectus*, ♂.



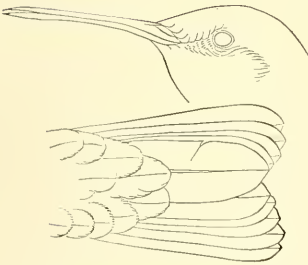
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2. *SAUCEROTTIA sophia*.

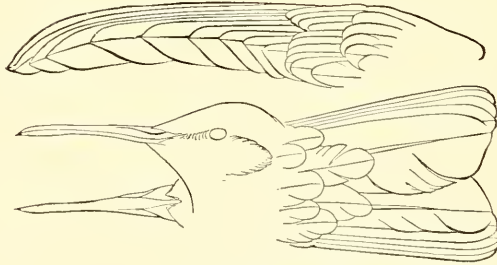


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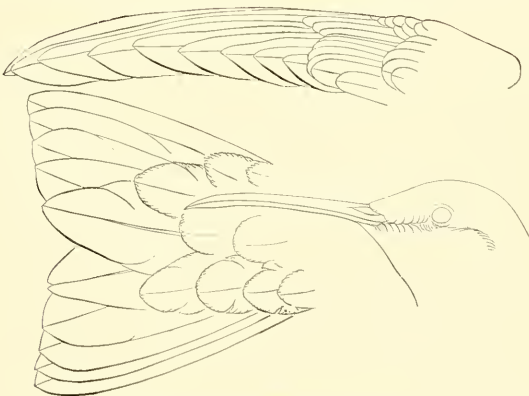
3. *GOLDMANIA violiceps*.



4. *AMIZILIS cyanocephala*.



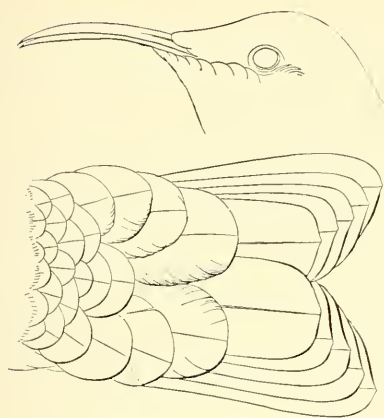
5. *AMIZILIS amazilia*, ♂.



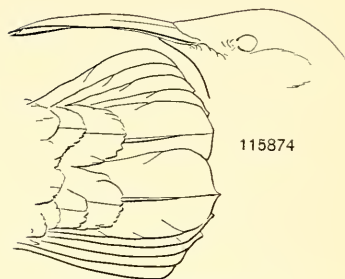
6. *ANTHRACOTHORAX nigricollis*, ♂.



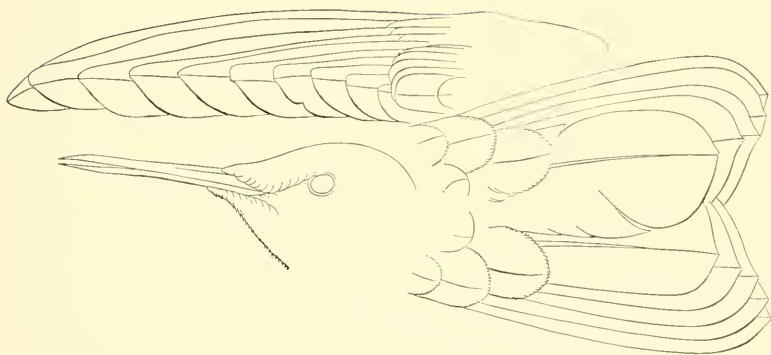




1. *EULAMPIS jugularis*.



2. *SERICOTES holosericeus*.

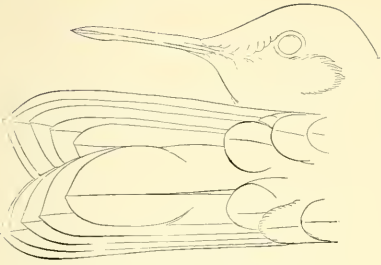


3. *COLIBRI iolotus*.



4. *CYANOLÆMUS clemenciae*.

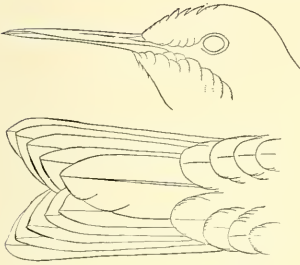




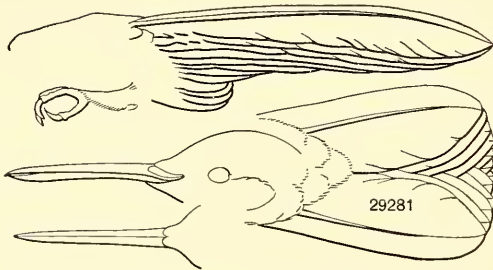
1. *LAMPROLAIMA rhami*, ♂.



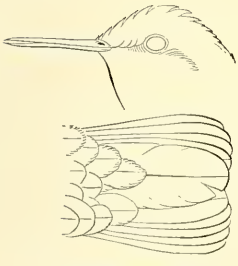
2. *PANTERPE insignis*.



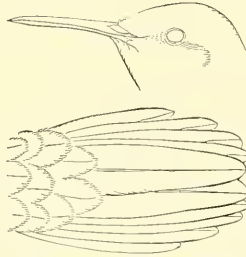
3. *OREOPYRA calolæma*, ♂.



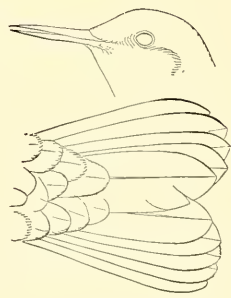
4. *LAMPORNIS amethystinus*.



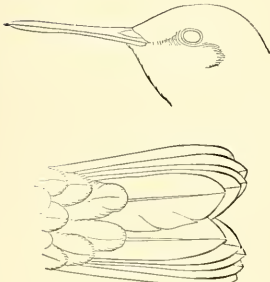
5. *KLAIS guimeti*, ♂.



6. *DAMOPHILA julia*, ♂.



7. *ABEILLIA abeillei*, ♂.



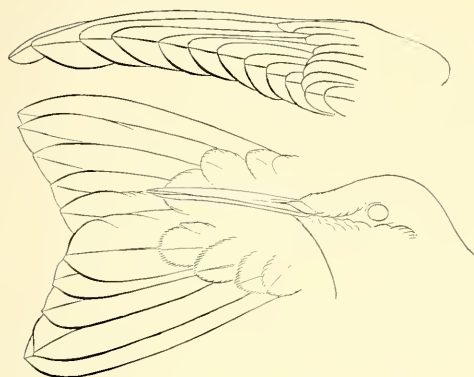
8. *POLYERATA amabilis*.



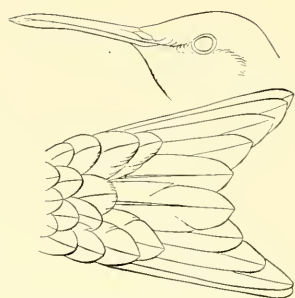
9. *HELIOTHRYX auritus*, ♂.



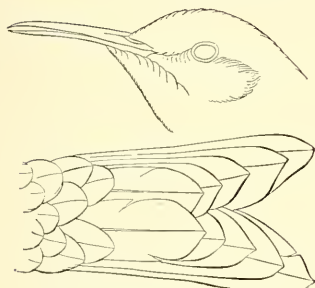




1. *CYANOPHAIA*.



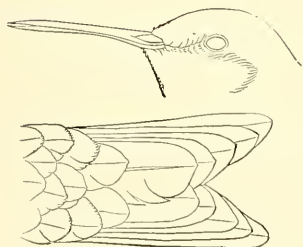
2. *LEPIDOPYGA goudoti*, ♂.



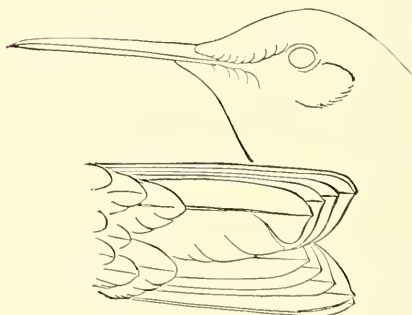
3. *THALURANIA glaucopsis*, ♂.



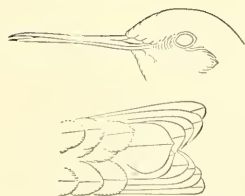
4. *RICCORDIA swainsoni*, ♂.



5. *CHLOROSTILBON aureiventris*, ♂.

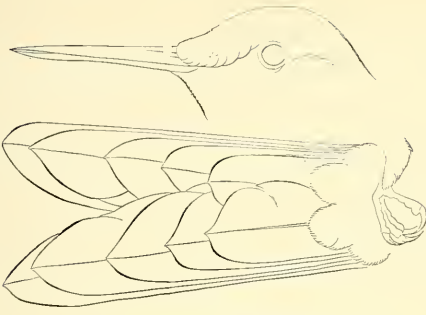


7. *EUGENES fulgens*, ♂.

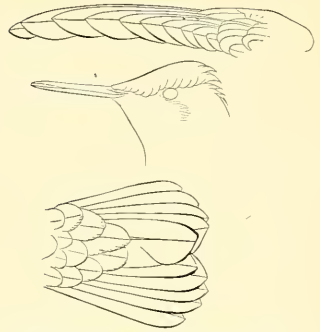


6. *CHLOROSTILBON*  
(*Panychlora*) *aliciae*.

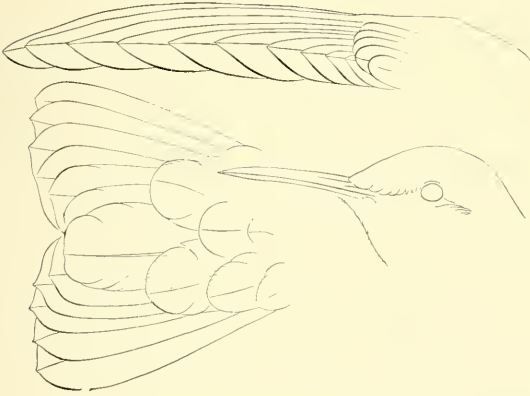




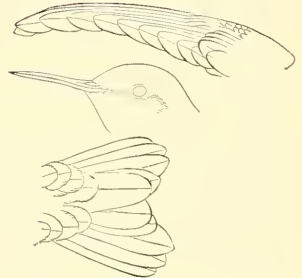
1. *HELIODOXA jacula*, ♂.



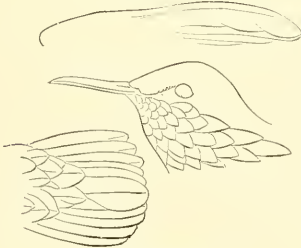
2. *MICROCHERA albo-coronata*, ♂.



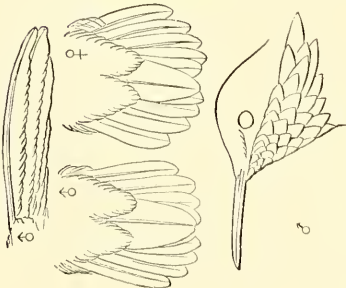
3. *FLORISUGA mellivora*, ♂.



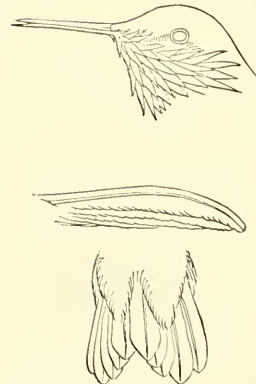
4. *MELLISUGA minima*, ♂.



5. *ATTHIS ellioti*, ♂.



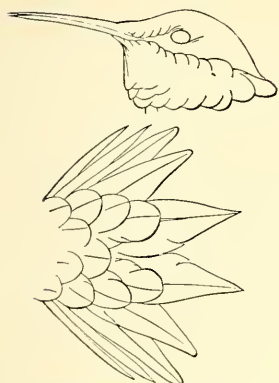
6. *ATTHIS heloisa*, ♂.



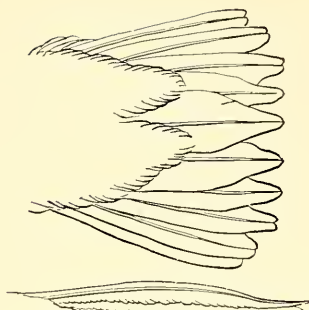
7. *STELLULA calliope*, ♂.



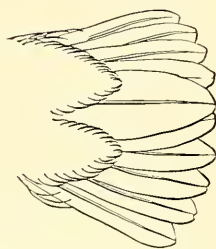




1. *SELASPHORUS alleni*, ♂.



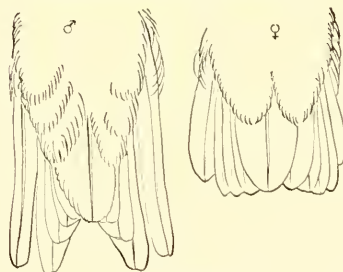
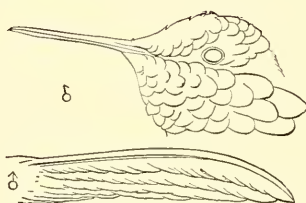
2. *SELASPHORUS platycercus*, ♂.



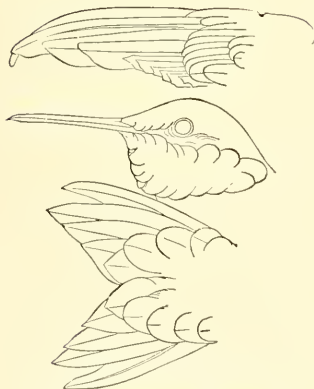
3. *S. platycercus*, ♀.



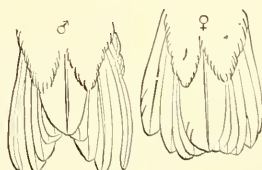
4. *SELASPHORUS rufus*, ♂.



7. *CALYPTE anna*.



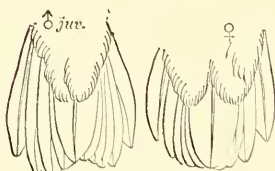
5. *ARCHILOCHUS colubris*, ♂.



8. *CALYPTE costae*.

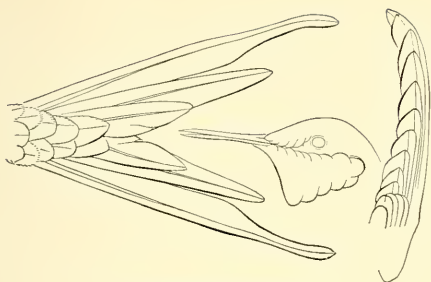


6. *ARCHILOCHUS colubris*, ♀.

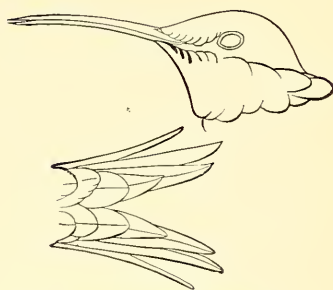


3. *ARCHILOCHUS alexandri*.

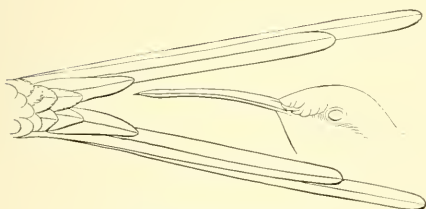




1. *TILMATURA duponti*, ♂



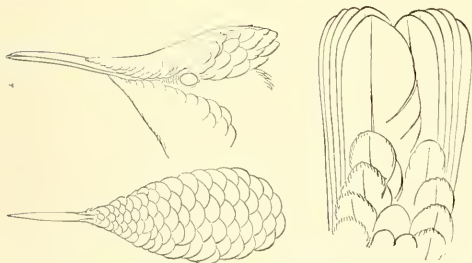
2. *CALOTHORAX lucifer*, ♂.



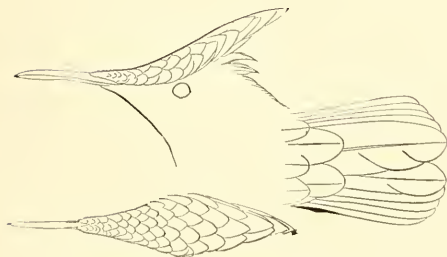
3. *DORICHA enicura*, ♂.



4. *NESOPHLOX evelynae*.



5. *CHRYSOLAMPIS mosquitus*, ♂.



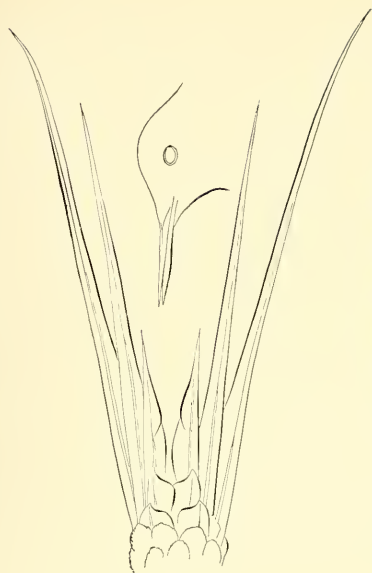
6. *ORTHORHYNCHUS cristatus*, ♂.



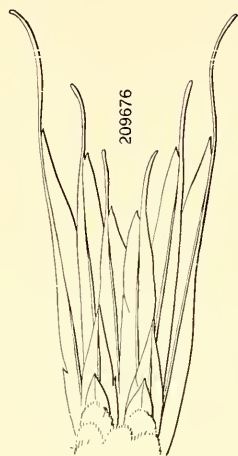
7. *LOPHORNIS ornatus*, ♂.



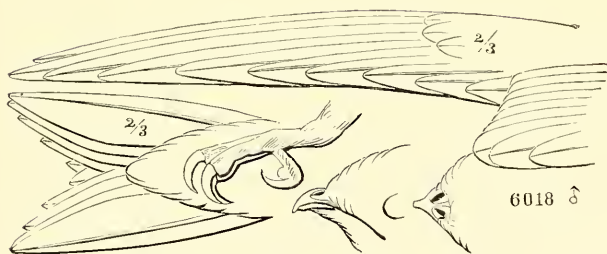




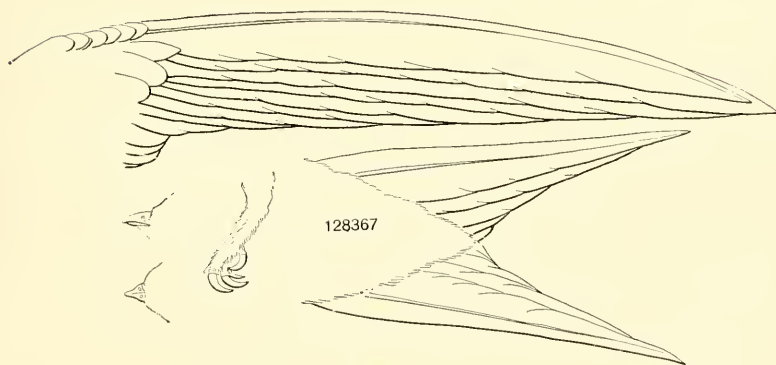
1. POPELAIRIA langsdorffi, ♂.



2. POPELAIRIA æquatorialis, ♂.



3. AËRONAUTES melanoleucus.

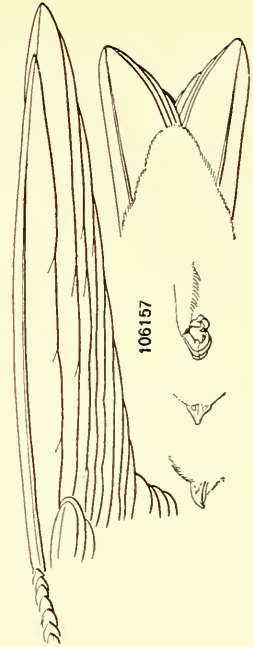


4. PANYPTILA cayanensis.

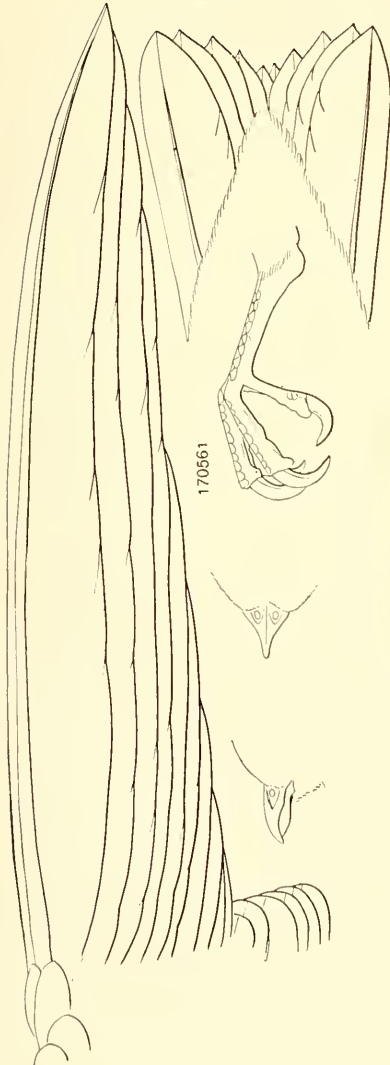




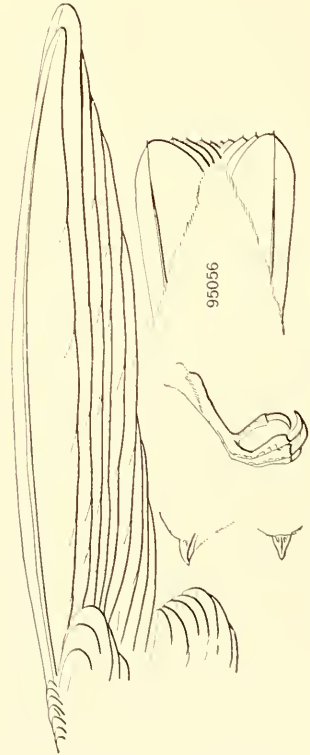
1. CHÆTURA pelagica.



4. TACHORNIS phœnicobia.



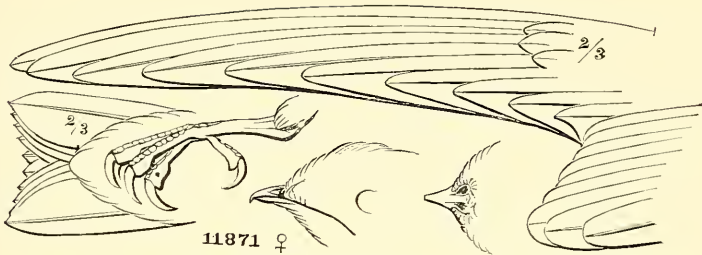
2. STREPTOPROCNE albicincta.



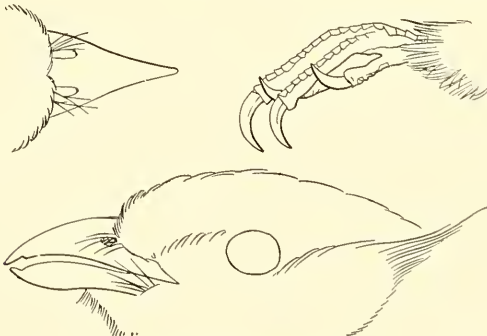
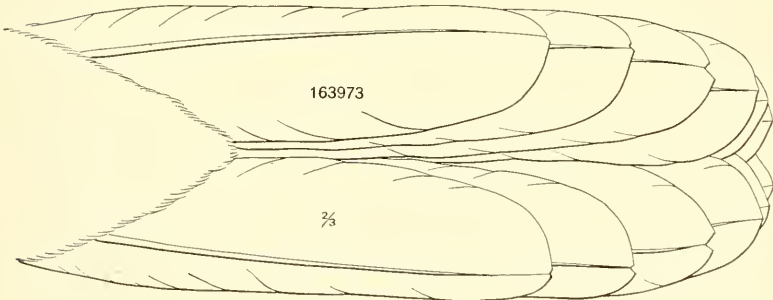
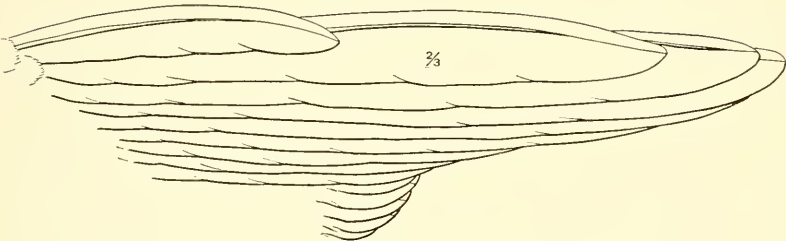
3. CYPSELOIDES brunneitorques.







1. NEPHÆCETES borealis.



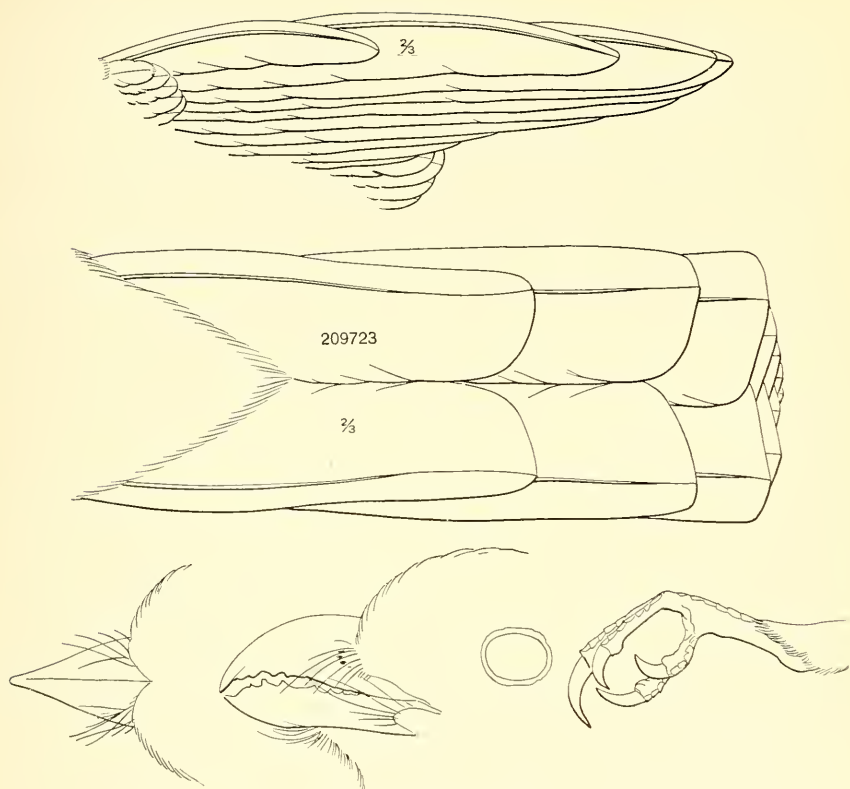




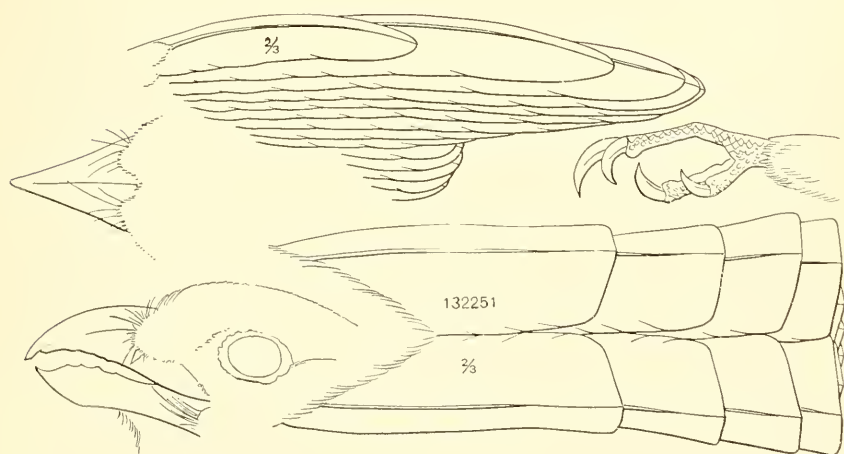
I. PHAROMACHRUS *costaricensis*.





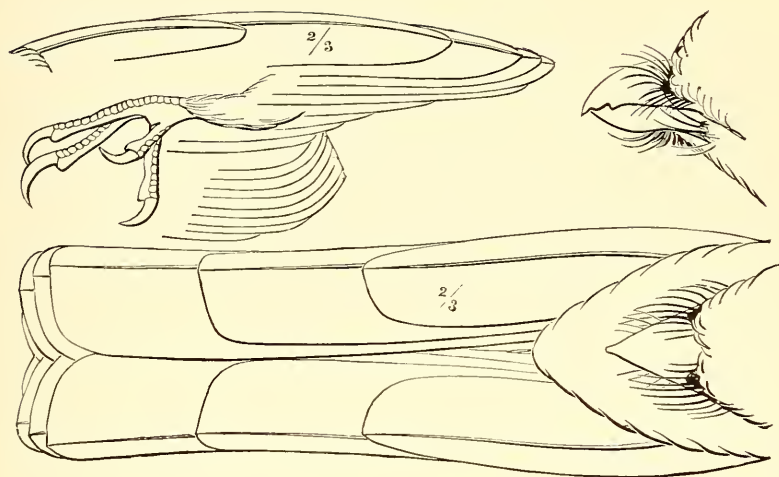


1. *CURUCUJUS massena*.

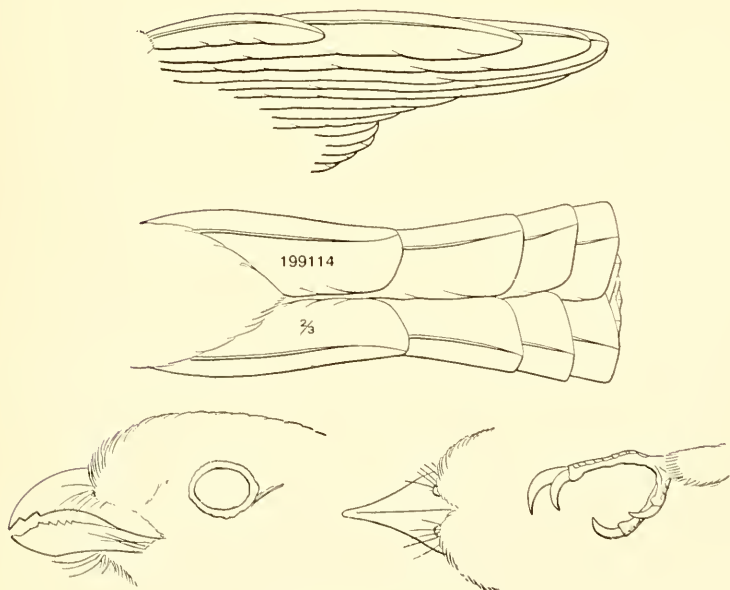


2. *TROGON melanocephalus*.





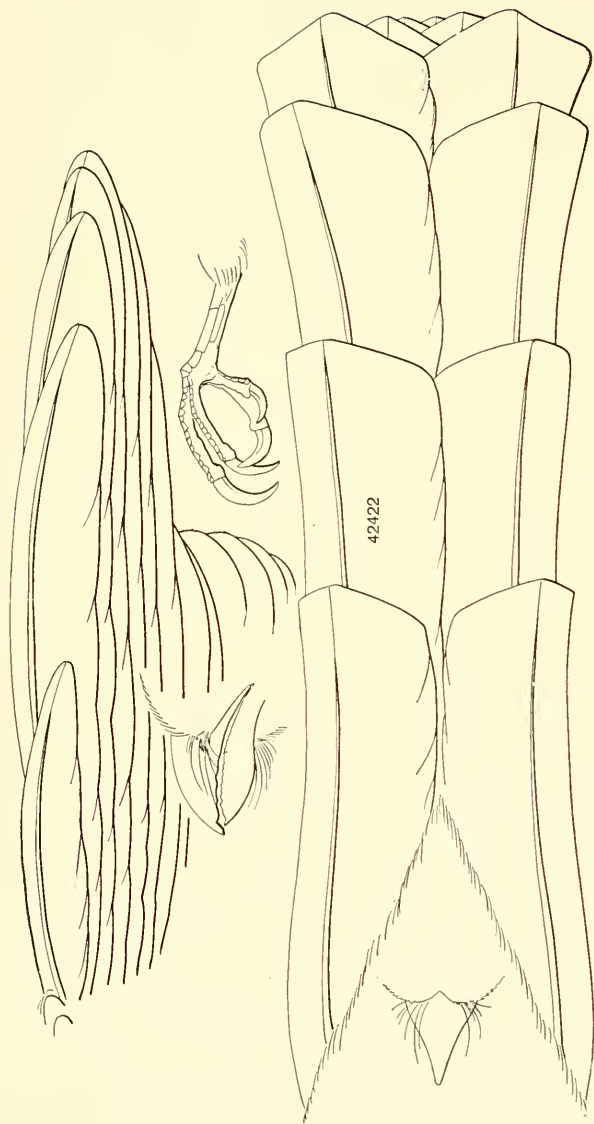
1. *TROGONURUS ambiguus*.



2. *CHRYSOTROGON caligatus*.

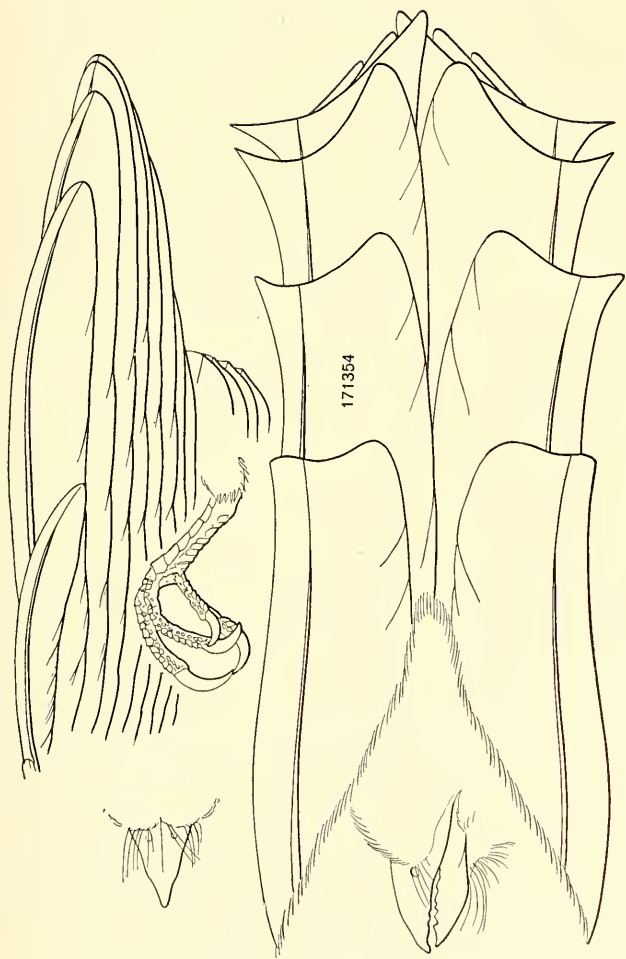






I. TEMNOTROGON roseigaster.





I. PRIOTELUS temnurus.

















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